Market dialogue concerning climate measures, E10-Hålogolandsveien

1. Introduction

We are contacting you to enquire whether you would like to provide your input and reactions to the climate measures assessed in the E10/ rv. 85 Tjeldsund – Gullesfjordbotn – Langvassbukt project. This particularly concerns the design of specific requirements and criteria.

We are open to input and ideas from all stakeholders; both potential tenderers and other parties. This enquiry is addressed to you directly, since you responded to the announcement of the market dialogue made in November 2019.

In this instance, we do not plan to hold physical meetings. We are, however, open to receiving your input and reactions either in writing and/or as a video or telephone meeting. The deadline is the 12. October, and we are open for a dialog before that.

2. Purpose

The purpose of this enquiry is to obtain the market's help to include the most effective, appropriate and cost-effective climate measures possible in the project. The project has a high contract value, with equivalently high climate ambitions. The contract extends for many years, and the rapid pace of technological development in the climate area make it difficult to retain an overview of what the market believes it can offer both in the near future and going forward.

However, we do not want to set unrealistic requirements which the market is unable to deliver, or to include measures that are inappropriately expensive in proportion to the climate benefits. This is a difficult balance, which makes it expedient to obtain the market's reactions to the measures and principles for the requirements on which we are currently working.

So far, climate considerations are intended to be safeguarded through:

1. Specific requirements concerning climate measures in the contract documents, and on which the winning supplier must deliver. These requirements are set by us as the client and in principle are not subject to negotiation or derogation.

2. Award criteria – we will allow the tenderers themselves to specify and describe which additional climate measures they offer to undertake, and this will be given credit in the assessment of the best overall bid. It will thus be up to the tenderers to choose which binding climate measures they present; and the better the climate measures offered, the better our assessment of the bid. It is, however, difficult to determine which type of climate measures should be requested, and in which format this should be offered.

So far, no requirements, criteria or measures have been finally determined, and this is the subject of ongoing work. The measures and requirements presented are just some among several possible requirements, criteria and measures that are assessed by the project. The requirements, criteria and measures that are finally included in the project will be determined solely by us, based on various different input from the market, other stakeholders, advisers and our own internal assessments.

3. Contract terms and conditions

3.1 Introduction

We wish to set climate requirements that are ambitious and forward-looking, and which challenge the market concerning what it is possible to deliver. However, we would like to receive input on whether the climate requirements proposed below are appropriate and cost-effective. In principle, we want "as much climate as possible for our money", so that we give priority to climate requirements that are cost-effective in terms of the volume of reduced greenhouse gas emissions.

We would also like input on whether some of the requirements below are insufficiently ambitious, viewed in the light that the expected start-up of the construction works lies a few years ahead, and will be ongoing for several more years before the new infrastructure is opened to traffic.

We would also like to receive input on whether the requirements are designed on a reasonable basis, with reference to relevant standards.

3.2 Possible requirements that will be made of materials

Preliminary working version of requirements that it may be relevant to set:

1.1. Low-carbon concrete is to be used in accordance with the Norwegian Concrete Association's publication no. 37 *Lavkarbonbetong* (Low-carbon concrete) (2020), where this is possible in view of the contract's other requirements. This requirement does not apply to special concrete such as AUV concrete, light concrete and shotcrete. A minimum of 50% of the low-carbon concrete used must be class A and the remainder must be class B. EPD must be used as documentation.

1.2. Materials and products specified in table x must fulfil the emission requirements in the table. This must be documented in the execution of the contract, with EPD or equivalent ecolabel type III, in accordance with ISO 14025. The emission requirement in table x concerns the total greenhouse gas emissions for the product, from raw material to factory gate (A1-A3 in accordance with EN15804). In addition, greenhouse gas emissions arising from the transport from factory gate to construction site (A4) for materials and products in the table must be included. For A4, EPD or an equivalent ecolabel, type III, in accordance with ISO 14025, or a detailed calculation based on mode of transport, must be submitted. EPD provided for materials and products in table x is used to assess and document environmental impacts in the project's greenhouse gas accounts. For products subject to requirements concerning maximum greenhouse gas emissions, the total sum for the product, from raw material to factory gate (A1-A3 in accordance with EN15804), is calculated. EPD and ecolabel type III executed in accordance with ISO 14025, ISO 21930 and/or EN 15804 are accepted. If it is not possible to meet this requirement, due to disproportionally high costs or a lack of progress, exceptions must be approved by the client.

Table X

Materials and products	**Documentation and overview of any greenhouse gas emission requirements set (from raw materials to factory gate, A1-A3 in accordance with EN15804)**
Structural steel Open profiles (e.g. H profile)	EPD or equivalent environmental declarations, type III. Must consist of at least 80% recirculated steel
Construction steel: hollow profiles	EPD or equivalent environmental declarations, type III. Must consist of at least 20% recirculated steel
Reinforcing steel	EPD or equivalent environmental declarations, type III. Maximum requirement 0.4 kg CO_2e/kg reinforcing steel.

Structural steel: welded steel profiles (beams and pillars)	EPD or equivalent environmental declarations, type III. Must consist of at least 20% recirculated steel
Steel piles and steel sheel piles	EPD or equivalent environmental declarations, type III. Maximum requirement 1,100 kg CO2/tonnes of steel
Insulation: XPS	EPD or equivalent environmental declarations, type III. Maximum requirement 5.0 kg CO_2e/m_2 insulation with R=1
Asphalt, mass without PMB	EPD or equivalent environmental declarations, type III. Maximum requirement 50 kg CO_2e/tonnes of asphalt
Asphalt, mass with PMB	EPD or equivalent environmental declarations, type III. Maximum requirement 65 kg CO_2e/tonnes of asphalt

1.3. The supplier will use best practice and techniques that reduce the temperature of asphalt production and when asphalt is laid. The maximum production temperature on laying low-temperature asphalt may not exceed 120°C. On using polymer-modified binders, which increase the service life, a production temperature of up to 155°C is permitted. A supplier can deviate from the CO_2intensity if they can show that the entire solution overall comes out better than on selecting products on the basis of these requirements.

The supplier will deliver a technical report and design and engineering plan showing asphalt mixing and laying techniques, and the maximum temperatures required for these techniques. Technical data sheets from the producer with a description of the binder and asphalt mix must be available in a digitally structured format adapted to open BIM.

1.4. Recycled asphalt produced with suitable mixing equipment and in such a way that the mix provides a homogeneous mass must be used. The mass type requirements are fulfilled with the proportion of asphalt granulate used for standardised mass types described in the Norwegian Public Roads Administration's handbook, N200. This also applies to the mechanical strength of the stone material. For high recycled ratios, the binder rigidity must be adjusted in accordance with NS-EN13108. The quantity and type of additive must be documented in the digital technical datasheet for the asphalt, and delivered to the client before the first asphalt delivery. A supplier may deviate from the CO2 intensity if they can show that the entire solution, in overall terms, performs better than on selecting products on the basis of these requirements.

3.3 Possible requirements that will be set for emissions from the facility and transport

Preliminary working version of requirements that it may be relevant to set:
For all mobile construction machines under 30 tonnes that are used for the project, a minimum of 10% must apply zero-emission technology and a minimum of 40% must be fossil-free. For construction machines that do not use zero-emission technology, a minimum of 60% must be Stage V and the remainder Stage IV. This requirement does not apply to machines and equipment that will only be used very sporadically at the facility and/or are highly specialised whereby changes to the machine will entail disproportionally high costs or lack of progress.

A minimum of 50% of all vehicles used for the project must use zero-emission technology, a minimum of 20% must be fossil-free. 40% of the vehicles must be in at least euro class 6/VI.

A minimum of 50% of other machines and equipment must use zero-emission technology.

Heating and drying must be fossil-free.

Any biofuels used must fulfil the EU's sustainability criteria for biofuels (product regulations, chapter 3) and satisfy EN15940 concerning Fuel – Paraffin diesel from synthesis or hydrogen processing. No biofuels based on palm oil, by-products from palm oil production or soya may be used, with the exception of biofuels that are certified as low ILUC (indirect land use changes), in line with the requirements in the EU Regulation. Advanced biofuels are produced from residues and waste from the food industry, agriculture and forestry.

If it is not possible to fulfil the requirements set due to disproportionally high costs or lack of progress, exceptions must be approved by the client.

3.3. Possible operational requirements

We have found it particularly challenging to set specific climate requirements for the operational phase. The winning supplier will first build the facility, which will take several years, after which the supplier will operate the facility for 25 years. In view of the rapid development of climate technology, it is naturally difficult to set good and appropriate requirements for the first operational year, which lies a few years ahead in time. It is even more difficult to set such requirements that are also specific, relevant and appropriate throughout a 25-year operational period. We would generally like to receive input on which type of requirements it is appropriate to set in the operational phase and how such requirements can be designed.

Possible types of requirements that are assessed are:

- All construction work performed during the operational phase (e.g. heavier maintenance tasks) must comply with the same environmental and climate requirements as applied to the construction phase for the facility.
- For the vehicles used in the operation of the facility, a proportion
    - (e.g. 30%) must be emission-free (electrical or other zero-emission technology), and a proportion
    - (e.g. 60%) must fulfil the emission requirements for the highest EURO class, which is currently EURO VI, and
    - all or a proportion of the fuel used must be biofuel
- For the machines used in the operation of the facility, a proportion
    - (e.g. 50%) must be emission-free (electrical or other zero-emission technology), and a proportion
    - (e.g. 50%) must fulfil the emission requirements for the highest STAVE class, currently STAGE V.

3.4. Costs

We have found it difficult to estimate which costs these climate requirements will entail for the project. Even though this is difficult to answer, and there are a considerable number of uncertainty factors, we have a strong wish to hear, on a fully non-binding basis, approximately how expensive the requirements we have proposed above might be. You are already familiar with the main characteristics of the project from the previous market dialogue, and as far as we can see, you are in the best position to be able to comment on this.

4. Tenderer's own climate measures – award criterion

4.1 Introduction

In addition to the climate requirements stipulated in the contract, the intention will be for the tenderers themselves to offer additional climate measures in their bids. The calibre of the climate

measures offered, and the value assigned to them by the client, will be assessed under a separate award criterion for climate, environment and sustainability. This award criterion will consist of several sub-criteria, including one concerning sustainability, one concerning land use in conjunction with landfilling of soil, and one concerning climate issues. In this dialogue round, we would like input concerning the climate sub-criterion.

The climate sub-criterion will in turn be divided into several different topics.

4.2 Budget for greenhouse gas emissions

We plan for the tenderers to offer a binding greenhouse gas budget. The lower the greenhouse gas budget offered, the better the bid will be assessed, and the better the chances of winning the competition. This greenhouse gas budget will apply to the entire construction phase, until the facility is opened for traffic. The greenhouse gas budget must be binding and verifiable, so that when the facility is completed, and before it opens to traffic, the supplier must deliver greenhouse gas accounts showing compliance with the greenhouse gas budget and that greenhouse gas emissions from the construction works do not exceed what was stipulated in the budget.

We consider it to be impossible or inappropriate to measure and document absolutely all greenhouse gas emissions occurring in conjunction with a construction project on this scale. We therefore plan to request a greenhouse gas budget (and subsequent greenhouse gas accounts) for certain specific input factors (materials and equipment). It is important that there are good systems to measure the climate impact of the input factors included in the climate budget. We believe that this applies to:

- Concrete
- Steel
- Asphalt
- Vehicles
- Construction machines

These input factors are included in the Norwegian Public Roads Administration's system for the calculation of greenhouse gas emissions: VegLCA. It is planned to use VegLCA as the system in which the tenderers will draw up their greenhouse gas budget as part of the bid in the competition. In the intermediate phase module of VegLCA, additional input factors are included. Are any of these also "mature" enough to be included in the project's greenhouse gas budget? We wish to have the most comprehensive greenhouse gas budget possible, but we do see challenges related to the execution of the project as a PPP project, so that no design and engineering have taken place in advance. Which input factors about which there is sufficient knowledge (quantity and emission factor) can then be included in the bid?

EPD® (Environmental Product Declaration) is intended to be used as documentation of compliance with the greenhouse gas budget, together with the supplier's overview of quantities consumed.

We generally require your thoughts and input concerning the setting up of such a greenhouse gas budget as part of the award criterion, including which input factors (materials and equipment) should be included in the greenhouse gas budget, as well as the use of VegLCA as the documentation format for this.

Compliance with the greenhouse gas budget is documented by greenhouse gas accounts to be submitted by the supplier on the completion of the construction work, before it is opened to traffic. The idea is that if these greenhouse gas accounts show excessive greenhouse gas emissions, and that the greenhouse gas budget has thereby been exceeded, this will result in a monetary sanction. The

greater the excessive emissions, the larger the amount to be paid by the supplier. However, we are uncertain about how strict this sanction should be and how it should be measured. Would it be a good idea to set it as a specific monetary amount per tonne of excessive CO2 emissions? This is an important principle about which we are very interested in hearing your thoughts.

We would also like to hear whether you think it is a good idea to have a corresponding bonus for over-fulfilment of the budget. This would be the case if the greenhouse gas accounts show that greenhouse gas emissions are below the greenhouse gas budget that was submitted in the bid. It must be noted, however, that any such mechanism would entail that the client allocates funds for an unspecified bonus payout, and it is uncertain whether this is appropriate.

4.3 Other measures to reduce greenhouse gas emissions

Since a greenhouse gas budget will only apply to specific input factors (concrete materials and equipment), there will be a residual element of other input factors that also entail greenhouse gas emissions, but which are not captured in any such greenhouse gas budget. We are assessing whether it should also be possible to offer other measures to reduce greenhouse gas emissions in the project, in addition to what is offered via the greenhouse gas budget.

We will leave it to the tenderers to design, propose and offer any such other measures. Now, however, we would like to hear whether there are any suggestions concerning which topics or types of measures could be named in the tender documents, as suggestions for such other measures. Among other things, it has been assessed whether it should be specifically proposed that the tenderers can offer to commit to certification of their execution of the construction work by a third-party system, such as CEEQUAL, or another system chosen by the tenderer and described in the bid. If the bidder wishes to enter into a certification commitment, it must be specified what the certification will achieve (where this is applicable), and it must be described what added value this provides beyond the contractual requirements.

How well we assess and value such other measures offered, on evaluating the bids, will be discretionary and not mathematical.

We would generally like to receive all types of input or suggestions in this respect.

4.4 Fixed unit price for one tonne of CO2

As a further climate measure, we are assessing requesting the tenderers to offer one or more unit prices per tonne of CO2 in the bid, so that, after signing the contract, the client can “buy” further CO2 reductions beyond what is offered in the greenhouse gas budget and other measures.

The idea is that the client, after the competition has been held and the contract has been established, may wish to pay more, in order to achieve an even lower greenhouse gas budget in the project. This adheres to the same well-known mechanism for additional works, whereby construction contracts usually include a number of unit prices for crews and machines, if the client requires changes to the contract by ordering additional works. In the same way, we could assess and reach advance agreement on unit prices for further reduction of greenhouse gas emissions, by the client ordering a “change” of a given number of thousand tonnes of CO2, and then paying a pre-determined monetary amount per tonne of CO2 reduction as “ordered” by the client.

This is a new approach and mechanism, and subject to considerable uncertainty. We also acknowledge that there will be a difference in the price per tonne of CO2 reduction that is “ordered” early in the construction phase and late in the construction phase, respectively, as it will probably be easier and cheaper to achieve a further CO2 reduction that is notified at an early stage in conjunction with the

planning of the works. We are also aware that the costs per tonne of reduced CO2 emissions are lower for the first tonnes that are "ordered", and that the more thousand tonnes reduction the client "orders" in this way, the more cost-intensive this will be. For this reason, we do not intend to set any fixed format for any such CO2 unit price offered, but leave it to the tenderers to draw up a binding offer in terms of format, terms and different unit prices per tonne of CO2 that can be "ordered" by the client after the establishment of the contract. We will perform a discretionary evaluation of the bids, in terms of unit prices and terms.

We wish to receive all types of input or suggestions concerning the principle of being able to purchase additional CO2 reductions at an agreed unit price, and the design thereof.

5. Summary

In overall terms, we wish to receive input concerning:

1. Are the climate requirements appropriate in a cost/benefit perspective? The aim of the project is to achieve the greatest possible reduction of greenhouse gas emissions on the most cost-effective basis. For example, are any of the requirements strong cost drivers and/or give very little reduction of emissions? Are there any further requirements that are very favourable in a cost/benefit perspective and that should be included?

2. Are the principles in the award criterion designed to give you an opportunity to perform very well in the climate area and also document the benefits from the bid? So that we, as the client, choose the best bid in real terms.

In addition to these two key elements, we have asked several more detailed questions. We naturally wish to receive input on as much as possible, since this will be of great help in designing the project's climate profile, but we do respect that you might not have the time or opportunity to do so. It is also of great value for us to know whether there is any of this about which you do not actually have any knowledge, or to which you are unable to respond. This will give us an indication of the knowledge status in the market and the associated risks.

6. Process going forward

If you would like to help us with input concerning any or all the topics raised here, please contact us within the 12. October 2020, but preferably as soon as possible. If a longer deadline is needed, then contact us.

Contact information:

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You are free to choose the most appropriate form of further dialogue and whether this is via written input or in a video/telephone meeting, or both.

We look forward to hearing your assessments and thoughts.