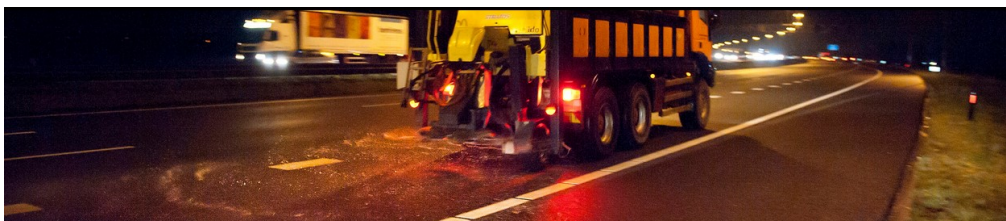


Market Consultation Document – Road Weather Information System (RWIS)

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1. Introduction

1.1 Purpose

The purpose of this written Market Consultation is to act as preparation for the proposed "Road Weather Information System" tender (to be referred to hereinafter by its abbreviation "RWIS"). Rijkswaterstaat [the Dutch Directorate-General for Public Works and Water Management] (to be referred to hereinafter by its abbreviation "RWS") attaches a great deal of value to the views of market players and intends to involve them at an early stage and actively before the proposed tender gets underway. RWS is therefore inviting market players to take part in this Market Consultation.

Background to RWIS

Winter maintenance is an important service in RWS's fulfilment of traffic management. The RWS Road Weather Information System is an essential decision support system for controlling the winter maintenance of Dutch national and secondary roads.

The RWIS consists of a road side measurement station, a weather station and sensors in the road surface which are at one of 330 locations along a national or secondary road. Data is collected through sensors in the road surface, processed, enriched and presented in a central application named *Winter-Controle*. Winter maintenance coordinators use this system to monitor current road conditions in their coordination area, the road surface forecast and make a decision based in particular on RWIS (enhanced with a KNMI [Royal Netherlands Meteorological Institute] road surface model) on whether or not to grit the roads. By using RWIS and *Winter-Controle*, gritting is only done where and when necessary.

The RWIS is used at this time by RWS (c. 230 RWIS stations) and by seven provinces (c. 100 RWIS stations). What's more, it is expected, as part of the RWS Partner programme, that RWS will play a greater part nationally in winter maintenance and support and that other players will also participate in the use of RWIS and/or integrate their existing systems into the *Winter-Controle* application.

RWIS project objective

Winter maintenance has a direct impact on traffic flow and safety in the event of snowfalls or slipperiness. In addition to replacing the end-of-life RWIS, RWS intends to fulfil changing needs and bring about an expansion of the RWS partner programme. The intended outcome of this is an accurate, reliable and up-to-date RWIS with minimal down time and high availability.

The objective of this RWIS project is to achieve a high-grade, flexible, future-proof and sustainable replacement for the current RWIS stations (basics) with the aim of:

1. Bringing about the expansion of the RWS Partner Programme with regard to RWIS.
2. Enabling updating/replacement of end-of-life RWIS stations and sensors with a future-proof solution.
3. Fulfilling RWS and partners' changing needs with regard to RWIS.

1.2 Aim of Market Consultation

RWS has published this Market Consultation document on TenderNed with the aim of reaching out to as many market players as possible, arousing their interest and encouraging them to think collaboratively.

RWS aims with this Market Consultation:

- a) to gain insight into the actual feasibility of the project;
- b) to gain insight into the preconditions under which the project can be implemented;
- c) to gather input for the procurement/tender strategy and the tender documents (gaining new ideas, assessing existing ideas);

- d) to involve the market at an early stage in the project in order to enable the tender documents to be attuned as closely as possible to the market situation.

Specifically, RWS intends to assess:

- whether the assignment is feasible and the stated assumptions are realistic,
- whether RWS's ideas are consistent with future market developments, products and players,
- the extent to which functional or technical specification is required and which standards, if any, are relevant,
- whether the market can meet the demand.

RWS emphasises that this Market Consultation is not part of the tender and that no rights can be derived from it.

RWS is to use insights obtained from the Market Consultation (where relevant) in the preparation of the tender and the tender documents. RWS reserves the right not to use these insights or not to use them in full.

1.3 Market Consultation target group

Any players believing themselves able to make a contribution to this Market Consultation or able to think collaboratively in regard to future solutions, developments, new sensors and combining measurement data may respond. The primary target group of this Market Consultation consists of those market players who have experience with or knowledge of / about:

- Supplying, installing and/or maintaining a complete road weather information system.
- Proven experience of road weather information systems with major highway authorities at home and/or abroad.
- Expertise with regard to the various sensors, technologies and algorithms pertaining to road weather information systems on, in and along roads.

Knowledge of winter maintenance in the Netherlands.

1.4 Market Consultation approach in broad terms

The Market Consultation consists of a round of written questions. The questions can be found in chapter 4. If RWS sees fit, interviews will be held with (some of) the players who have registered. The players will be able to give further expression to their vision of the questions posed during these one-to-one discussions.

Chapter 3 describes the operating procedure for and approach to the Market Consultation in detail.

1.5 About Rijkswaterstaat

Rijkswaterstaat is the operational organisation that manages and develops the national networks sustainably on behalf of the Dutch Ministry of Infrastructure and Water Management (*IenW* in Dutch).

Rijkswaterstaat works towards the smooth and safe flow of traffic, on a safe, clean and user-oriented national highways and waterways system and on the protection of the Netherlands against flooding. To this end, Rijkswaterstaat manages the national trunk road network (5,695 km), the national waterway network (1,686 km of canals, rivers and 6,165 km of waterways in open water) and the national water system (65,250 km²).

Rijkswaterstaat Central Information Services (RWS-CIV in Dutch) and Rijkswaterstaat Traffic and Water Management (VWM in Dutch) are two of the national RWS organisational components. RWS-CIV is responsible for gathering, managing and issuing data, as well as ICT management and development. Rijkswaterstaat Traffic and Water Management (VWM) fulfils the role of winter maintenance national coordinator. In terms of winter maintenance, VWM has a strong coordinating and standardising role. At the same time, VWM *supports*, advises and facilitates the regional

implementation of winter maintenance and is the internal client to the CIV where road weather information systems are concerned.

In their role as road authorities, Provinciale Waterstaat, the provinces taking part in this project, fulfil a similar role as Rijkswaterstaat VWM and are also clients to Rijkswaterstaat CIV via RWS-VWM. The www.rijkswaterstaat.nl website has more information about Rijkswaterstaat, RWS-CIV, Provinciale Waterstaat and RWS-VWM.

1.6 Policy

The emphasis in RWS policy (Market Vision) is on 'Jointly with the market'. This means that there is more attention paid to the fact that RWS as a client and its supply chain partners take joint responsibility among other things to manage and extend road weather information systems in a secure, sustainable and smart manner.

Along these lines, RWS would like to join you, as a market player, in seeking out a sound and manageable roadmap for road weather information systems and their management and maintenance. This is a roadmap which brings together ambitions on both sides, as well as feasibility and achievability to ensure that our road weather information systems are kept secure, available and reliable.

All players in the chain have an impact on the functioning of the road weather information systems and shoulder the responsibility that this entails. To this end, we will come together and discuss it early and often. An early approach to the market is one of the tools to make optimum use of market knowledge, skills and creativity. In this way we will jointly analyse the assignment which RWS is facing, seeking the best solution and establishing what form of tender and ultimately intended collaboration are most suitable.

For further information, see: <https://www.marktvisie.nu/voorbeeld/rijkswaterstaat/>

2. Scope of RWIS project

The current RWS RWIS consists of a central base and RWIS stations along the road which communicate with the central application. The central application receives the measurement data, saves it, processes it and presents it (web-based) to the users. At the same time, the central application distributes measurement data to service providers. Configuration data and tasks are sent from this central application to the individual RWIS stations. An example of such tasks is to retrieve a camera image or control a spraying facility.

The scope of this market consultation covers the procurement of new RWIS stations which can be integrated securely and scalable while at the same time being consistent current technology (APIs). The scope includes the management and maintenance associated with new RWIS stations. The RWIS stations we are currently looking at consist of an enclosure with electronics (the RWIS station itself) and a combination of contactless sensors, road surface sensors and an instrument shelter with associated sensors.

In some configurations, RWIS stations also have an actuator function which is capable of activating a spraying system via a serial interface. RWIS stations must also be capable of activating the spraying system autonomously based on preconfigured parameters.

RWIS stations require to be capable of being configured differently as regards the number and type of sensors. For instance: a comprehensive configuration, a basic configuration and a minimum configuration. Road surface sensors present or not, contactless sensors present or not and all sensors present come to mind in this regard. Stand-alone RWIS stations are to be preferred. This may not be possible for certain configurations. We would like to hear how this can best be resolved, e.g., 1 type RWIS station that can take on all configurations or 2 types that are intended specifically for a

certain range of configurations and, depending on it, featuring a stand-alone implementation or not.

We also want to investigate whether there is a facility for connecting the current sensors such as the road surface temperature sensors and conductivity sensors to the intended new RWIS stations. The current RWIS stations are likely to be phased out over several years. We would like to know whether it is possible to have the current RWIS stations managed by the supplier of the intended new RWIS stations/systems and what the consequences of this option might be.

The front-end (central web application) and the location determination (cold spot measurements) for the RWIS stations fall outside the scope of this market consultation.

2.1 Requirements placed on RWIS stations and sensors

E.1	Road surface sensor capable at minimum of measuring road surface temperature. Measurement range: -30 °C to +60 °C Accuracy: 0.1 °C Reliability: ± 0.2 °C (range of -15 °C to +10 °C)
E.2	Road surface sensor capable at minimum of measuring substrate temperature. Measurement range: -25 °C to +60 °C Accuracy: 0.1 °C Reliability: ± 0.3 °C (range of -15 °C to +10 °C)
E.3	For pavement embedded sensors : (the requirements only apply to embedded sensors - conductive measurements): Dry: no humidity within the measurement area of the sensor Not dry: from 0.01 mm water film thickness within the measurement area of the sensor
E.4	Road surface sensor capable at minimum of measuring water film height. Measurement range: 0.00 mm to 3.00 mm Accuracy: 0.01 mm Reliability: $\pm 50\%$ (range of 0.01 to 0.10 mm) $\pm 30\%$ (range of 0.11 to 3.00 mm)
E.5	The interface is required to utilise one of the following internet (IETF standard) protocols: - Https - Coaps
E.6	Communication with the system requires to be encrypted.
E.7	The interface uses REST or SOAP. REST is preferred.
E.8	The ability to configure the RWIS station via the interface is required.
E.9	The ability to manage the RWIS station via the interface is required.
E.10	The RWIS station is required to keep measurement data available for a minimum of one week so it can be collected later on.

E.11	The API requires a structured description.
E.12	The contractor is required to describe how the system can be integrated.
E.13	The RWIS can be managed and maintained by third parties. The supplier is required to make documentation available and, if necessary, to offer training.
E.14	The RWIS is required to have a modular structure and components are to be capable of being easily replaced and added.
E.15	The RWIS is required to be capable of being addressed simultaneously by a minimum of 5 clients.
E.16	The supplier is to provide the client with support for integration.
E.17	The enclosure for the RWIS station is required to protect the contents against winter conditions without the addition of a heating element for instance.
E.18	The enclosure for the RWIS station is required to be capable of withstanding temperatures ranging between -40 and + 80 degrees Celsius. This means that the contents remain functional within this range.
E.19	The enclosure for the RWIS station is required to be capable of being attached to a pole/mast.
E.20	The pole/mast used for the RWIS station is to feature passive safety.
E.21	The instrument shelter is to consist at minimum of a relative humidity, an air temperature and a precipitation sensor.
E.22	The instrument shelter requires to be mounted 1.5 metres above ground level.
E.23	The instrument shelter requires to be mounted on a pole with a swan neck or on an arm fitted to the RWIS station mast.
E.24	The RWIS station requires to be capable of communicating via a wireless connection.
E.25	The wireless connection requires to be capable of communicating via 4G at minimum.
E.26	The wireless communication requires to be capable of switching between providers in the event of a weak signal.
E.27	The road weather information system requires to be capable of processing a minimum of 28 different sensors per location.
E.28	The RWIS station can be installed with different configurations. (Basic, complete and limited equipment). For instance, with or without contactless sensors or road surface sensors.
E.29	The RWIS station measures road surface temperature using road surface sensors.
E.30	The RWIS station measures road surface temperature using a contactless sensor.
E.31	The RWIS station can disclose its position via GPS.

3. Market Consultation sequence

3.1 Procedure

This Market Consultation will be designed as set out below.

1) The Market Consultation will be launched by the publication of this document on TenderNed. The questionnaire (see chapter 4) is intended to give RWS an overview of the relevant options available on the market.

2) Any interested market player who believes it can make a contribution to this Market Consultation is requested to submit the answers to the questions in this Market Consultation by e-mail: inkoopcentrum-iv@rws.nl or via the messages option in TenderNed before the deadline date and time stated in section 3.1.1.

3) RWS is keeping the option open, based on the responses submitted, to invite players to give a supplementary verbal explanation of their replies on a one-to-one basis. RWS will be contacting these players and making an appointment by mutual agreement.

4) RWS is to conduct an analysis of the replies and the discussions and draw up a final report on these analyses. This report will be published with the tender documents (description/selection document).

The market consultation will be completed in June 2020.

3.1.1 Schedule

RWS will be working to the following schedule:

Activity	Date
Advance notice of market consultation	25 February 2020
Publish Market Consultation document	19 March 2020
Deadline date for posing questions about this Market Consultation document	10 April 2020
Publish Memorandum of Information	17 April 2020
Deadline date for submitting completed questionnaire	29 April 2020
Dates for any individual explanatory discussions (optional)	11 May – 25 May 2020
Analysis and completion	June 2020

Interested players cannot derive any rights from the above schedule.

RWS reserves the right to amend the schedule. The above schedule is therefore an indication, in which the greatest possible care is being taken to keep to the schedule.

3.1.2 Questions about the Market Consultation document

Market players have an opportunity to pose questions about unclear wording in the Market Consultation document aimed at unambiguous and transparent communication. If players have questions about the Market Consultation document, they can be posed by e-mail to: inkoopcentrum-iv@rws.nl or via the messages option in TenderNed before the "Deadline date for posing questions about this Market Consultation document" stated in section 3.1.1. RWS will be answering (anonymised) questions from market players in a Memorandum of Information which will be published on TenderNed.

3.1.4 Submitting a questionnaire

Any interested market player who believes it can make a contribution to the this Market Consultation is requested to submit the answers to the questionnaire from chapter 4 of this Market Consultation by e-mail: inkoopcentrum-iv@rws.nl or via the messages option in TenderNed before the "Deadline date for submitting completed questionnaire" stated in section 3.1.1.

3.1.5 Verbal explanation of questionnaire

RWS is keeping the option open, based on the responses submitted, to invite players to give a supplementary verbal explanation of their replies. RWS will contact these

players and schedule a half-day session by mutual agreement during the period stated in section 3.1.1 “Dates for any individual explanatory discussions (optional)”.

3.1.6 Conclusion of Market Consultation and feedback of results

The conclusion of the Market Consultation will take place within the timeframe stated in section 3.1.1. A report on the Market Consultation will be published with the tender documents on TenderNed. The report will include what the project team judge to be the major conclusions of the Market Consultation. In connection with this report, RWS expressly points out the following to market players:

1. The report will be made public. Market players are to grant RWS permission to use their replies and other information and/or data provided by them as input for this report.
2. The information will be included in anonymised form in the report. The report will list the participating market players.
3. The report will contain the conclusions as formulated by RWS. (The content of) the report will not be coordinated in draft form with the participating market players. The report will state that the report reflects the project team’s account and that this is not necessarily endorsed by the participating market players.

3.2 Confidentiality

RWS will not disclose the replies submitted and the minutes of the discussions in their entirety. RWS shows this information exclusively to employees and advisers who are directly involved in the Market Consultation and/or the tender, unless RWS is bound by statutory regulations to make more far-reaching disclosure. On the other hand, RWS is to use the information provided for the purpose of drafting the tender documents. RWS will not include any specific references to participants or commercially sensitive information in the tender documents.

3.3 Other provisions in respect of the Market Consultation

The Market Consultation is not part of the tender. In order to avoid putting Market Consultation participants in a privileged position, RWS will disclose the outcomes of the Market Consultation in the tender documents. In addition, all the information shared by RWS during the Market Consultation will be part of the tender documents.

There is no difference in the tender process between players who have and those who have not taken part in the Market Consultation.

Information in this Market Consultation may differ from the information provided later on (in the context of a tender or any other procurement process). No rights can be derived from the information provided in the context of the Market Consultation. The information is an indication intended purely to enhance the quality of the Market Consultation. If this information conflicts with information provided subsequently (in the context of a tender or any other procurement process), the latter is to prevail.

RWS does not award any payment to participants in the Market Consultation.

4. Questions

Questions about interest in the contract

A1	What would be your reasons for taking part in the tender procedure or not doing so?
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Questions about the contract content

B1	How, in your opinion, will a change in the desired service provision enable you to make a better bid? What are the disadvantages of the current description of the desired service provision as described in the scope?
B2	Which component of the scope (supply, installation, management and maintenance) are you able to deliver in your own right? Do you make use of third parties (bidding in a consortium or as a subcontractor) for the scope you are able to deliver?
B3	What, in your view, is the most ideal method of tendering? Options that come to mind are putting everything (supply, installation, management and maintenance) out to tender with one player, putting installation and management and maintenance out to tender separately or some other method? Can you explain this in greater detail?
B4	Which sensors can be connected to the RWIS station you intend to supply?
B5	Is it possible to use third-party sensors combined with the RWIS stations you intend to supply? Can you explain how these sensors are to be connected?
B6	How can the RWIS station you intend to supply be integrated into the information chains? Does this require a special interface to be used? Is it possible to utilise a REST API?
B7	By what means is it possible to manage and configure the new RWIS station securely and completely?
B8	What readings can be supplied by the sensors/RWIS stations to be supplied? Does this involve raw measurement data or does processing take place?
B9	On what forms of energy can the RWIS station operate? (solar energy comes to mind for example).
B10	Is it possible to save measurement data for a limited time in the new RWIS station? This could be due to communication malfunctions for example. If so, what is the maximum period for which data can be kept?
B11	Would you be prepared, if necessary, to manage and maintain third-party RWIS stations or third-party sensors? What are the risks associated with this?
B12	What is the expected service life of the various new types of sensor taking account of Dutch asphalt types?
B13	What new developments exist in terms of sensing? Is the interposition of always necessary?
B14	Is it possible to give a demonstration of your sensors and/or RWIS stations? Can you specify what form this will take?
B15	How can lifecycle management be best assured in the contract and the service provision?
B16	Are you able to give an indication of TCO (Total Cost of Ownership) for a true project cost estimate as regards supply, installation and management and maintenance of RWIS stations and sensors? The answer to this question will be treated confidentially and will not be part of the outcome of this market consultation to be published.

Questions about an effective collaboration

C1	Are you able to state how you appear, based on experience, to the ideal client? What is the mind-set of this ideal client?
C2	Do you have any recommendations as to how RWS might design the tender and service provision so as to bring about the best possible collaboration with a future supplier or suppliers? Would this make it more likely for you to take part in the tender?
	If you are not a Dutch bidder, do you have representatives who speak the Dutch language for the duration for the contract period? This is for implementation and management & maintenance in particular. Can you state how you will go about this?

Questions about the transition period

D1	How long is the expected transition period to replace the current RWIS stations and take on their management? On what factors does this depend?
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Finally

F1	Do you have any other ideas, suggestions or comments or can you see any other risks or challenges for RWS with regard to the proposed tender?
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F2	Are you prepared, if necessary, to explain your answers in a discussion?
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