APPROVED
by the Freeport of Ventspils Authority
at the Procurement Commission meeting
of 17 November 2015

OPEN TENDER

MODERNISATION OF THE VESSEL TRAFFIC MANAGEMENT SYSTEM OF THE FREEPORT OF VENTSPILS

REGULATIONS

Identification No. VBOP 2015/198 CEF

Ventspils, 2015

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GENERAL INFORMATION

1. Procurement identification No. VBOP 2015/198 CEF

2. Contracting Authority:

Name of the Contracting Authority	Freeport of Ventspils Authority
Address	Jana Street *(Jāņa iela)* 19, Ventspils, LV-3601
Taxpayer registration number	90000284085
Phone number	+371 63622586
Fax number	+371 63621297
E-mail address	iepirkumi@vbp.lv
Contact person	Roberts Purins *(Roberts Puriņš)*, phone +371 26569571, e-mail: roberts.purins@vbp.lv
Bank	AS Swedbank, bank code HABALV22
Bank account	LV52HABA0001402039422

3. The procurement procedure is an open tender in accordance with the Law On the Procurement of Public Service Providers (hereinafter referred to as the Law).

4. The procurement procedure is organised by the procurement commission created by the Freeport of Ventspils Authority (hereinafter referred to as the Commission).

5. The exchange of information within the scope of the procurement procedure shall be in Latvian by fax or e-mail and post (this means that when any information is sent by fax or e-mail, its original copy is sent by post at the same time). Any exchange of information should always state the object and the identification number of the procurement procedure it refers to. Information should be addressed to the contact persons indicated by the Contracting Authority or the supplier/tenderer. The time of reception of any information shall be the time, when the sender's fax machine shows the information that the fax or e-mail has been received.

6. An Interested Supplier shall mean the supplier who has received documents for the Procurement Procedure.

7. A Tenderer shall be any legal or natural person or an association of such persons, which has submitted a tender as prescribed by these regulations.

INFORMATION ABOUT THE OBJECT OF THE PROCUREMENT

8. The object of the procurement is modernisation of the Vessel Traffic Management System of the Freeport of Ventspils (hereinafter referred to as the VTMS), incl.:

- Development of the VTMS modernisation project and its coordination with the Contracting Authority and the necessary state and municipal authorities,
- Dismantling and disposal of the equipment and hardware to be dismantled,
- Manufacturing, delivery, installation and commissioning of new equipment and hardware,

- Training of staff of the Freeport of Ventspils Authority to work with the newly installed equipment and hardware,
- Provision of technical support and warranty.

9. CPV code – 34931500-7.

10. Works will be performed and financed according to the action programme of the Connecting Europe Facility.

11. Types of works envisaged in the procurement, their scopes and other requirements are indicated in Annexes No. 2 and No. 3 to these regulations, which serve as a basis for the preparation of the tender and performance of the procurement.

12. Each Tenderer shall have the right to submit one tender in one version.

13. Deadline for performance of the Contract: within 18 (eighteen) calendar months from the signature of the Contract: incl.:

Months 1–12	the VTMS modernisation project should be developed and coordinated with the Contracting Authority and the necessary state and municipal authorities; the equipment and hardware to be dismantled should be dismantled and disposed of; new equipment and hardware should be manufactured, delivered, installed and commissioned; staff of the Freeport of Ventspils Authority should be trained to work with the newly installed equipment and devices.
Months 13–18	the VTMS should pass the VTMS Site Acceptance Test to identify the operation of the VTMS.

14. A contract (Annex No. 3) will be concluded with the preferred tenderer.

15. The work acceptance protocol shall be signed after all the works have been performed in accordance with the obligations defined in the procurement contract, the works performed have been inspected and the Contracting Authority and the state *AS Elektroniskie sakari* have provided their opinion.

16. The place of performance of the contract is the Vessel Traffic Service Management Centre of the Freeport of Ventspils Authority (Kr. Valdemara Street *(Kr. Valdemāra iela)* 14, Ventspils) and sites under its supervision in the territory of the Freeport of Ventspils Authority.

17. All the interested suppliers can inspect the place of performance of the contract on working days, by previously applying to the contact person referred to in Paragraph 2 of the regulations.

18. Documents of the Procurement Procedure (hereinafter referred to as the Procurement Documents) include these Regulations of the Procurement Procedure with the following annexes, which are its integral part:

18.1. Tenderer's application (Annex No. 1).

18.2. Technical specification (Annex No. 2).

18.3. Draft contract (Annex No. 3).

18.4. List of subcontractors and subcontractor's certification forms (Annex No. 4).

18.5. Cost estimate of works (Annex No. 5).

19. The Interested Supplier can study the Procurement Documents and receive their electronic copies free of charge on the website of the Freeport of Ventspils Authority www.portofventspils.lv/lv/publiskie-iepirkumi, or to study printed copies of the Procurement Documents free of charge in the Freeport of Ventspils Authority (Jana Street 19, Ventspils) Room 202 until 10:00 on 04 January 2016, on working days from 8:00 to 12:00 and from 13:00 to 17:00, on Fridays until 16:00, by previous agreement with the Contracting Authority's contact person about the time of the visit.

20. In good time before the tender submission deadline, the Interested Supplier has the right to request the Contracting Authority to provide additional information about the requirements defined in the Procurement Documents. The Contracting Authority shall provide a reply as soon as possible, but no later than six days before the tender submission deadline.

21. The Contracting Authority has the right to amend the Procurement Documents, when necessary.

22. Additional information about the requirements included into Procurement Documents will be sent to the Interested Supplier, who has requested such information in writing, by fax or e-mail and at the same time by post.

23. The additional information provided to suppliers about the Procurement Documents and amendments to the Procurement Documents (if any) will be available on the website of the Freeport of Ventspils Authority www.portofventspils.lv/lv/publiskie-iepirkumi.

24. The additional information provided by the Contracting Authority and amendments to the Procurement Documents shall be an integral part of the Procurement Documents, and they are binding on the supplier.

25. The Tenderer's tender shall be valid and binding on its submitter until the procurement contract is concluded, but no less than for 150 (one hundred and fifty) calendar days after the tender submission deadline.

26. If the procurement contract cannot be concluded within the deadline envisaged in the Procurement Documents, the Contracting Authority may ask tenderers to extend their tender validity periods. The Tenderer, who has agreed to extend the validity term of its tender, will have no right to amend tender documents. The Contracting Authority may ask to extend the validity of the bid bond.

BID BOND

27. The bid bond shall be EUR 10,000 (ten thousand euro). The Tenderer shall guarantee its bid bond:

✓ by submitting to the Contracting Authority a guarantee or a policy issued by a bank or an insurance company, which must state the name of the Contracting Authority, the name of the procurement and its identification number, the bid bond validity and cases, when it can be used according to Paragraph 30 of these tender regulations, as well as must state that the guarantee enters into force unconditionally at the first request of the Contracting Authority;

or

✓ by transferring a security deposit to the bank account indicated by the Contracting Authority, stating in the bank payment order – "Piedāvājuma nodrošinājums iepirkuma procedūrai "Ventspils brīvostas Kuģu vadības sistēmas modernizācija", iepirkuma identifikācijas No. VBOP 2015/198 CEF" (Bid bond for the procurement procedure "Modernisation of the Vessel Traffic Management System of the Freeport of Ventspils", procurement identification No. VBOP 2015/198 CEF).

The guarantee issued by a credit institution, or a policy issued by an insurance company, or the payment document confirming the transfer of the tender bid bond to the bank account of the Contracting Authority shall be attached to tender documents.

The tender, for which no bid bond was submitted according to the procedure defined in the Procurement Documents and in the requested amount, or which has no document certifying payment of the bid bond attached, will be considered non-compliant with the requirements of the Procurement Documents, and the Tenderer will be excluded from participation in the procurement procedure.

28. The bid bond will be repaid or withdrawn within 10 (ten) working days after the relevant decision of the Commission:

28.1. To the Tenderer, who withdraws its tender before the tender submission deadline;

28.2. To all Tenderers, if the Procurement Procedure is terminated without any result or is suspended.

29. To other Tenderers, including the preferred tenderer in the procurement procedure, the bid bond will be repaid or the bank guarantee will be withdrawn no later than within 10 (ten) working days after the conclusion of the procurement contract.

30. The bid bond will not be repaid or the issuer of the bid bond surety provider will not pay the bid bond amount to the Contracting Authority, if:

30.1. the Tenderer withdraws its tender while it is valid.

30.2. the preferred tenderer in the procurement procedure does not conclude the procurement contract within the Contracting Authority's specified deadline.

31. The bid bond should be in force for no less than 150 (one hundred and fifty) calendar days after the tender submission deadline.

RULES OF PARTICIPATION IN THE PROCUREMENT PROCEDURE

32. Participation in the procurement procedure is freely available to any capacitated person or a public institution, an association of these persons in any combinations thereof, regardless of its place of registration or operation, form of commercial activity and ownership, which offers in the market the services intended in the procurement and meets the following requirements of the rules of participation:

32.1. By a court judgement or a prosecutor's penal prescription which has entered into force and has become indisputable, the Tenderer or the person entitled to represent the Tenderer or make decisions or supervise the tenderer **has not been found guilty of** corruption crime, financial fraud, money laundering or participation in a criminal organization, **or 3 years have passed from the day, when a court judgement or a prosecutor's penal prescription entered into force and became indisputable, to the day of submission of the tender.**

32.2. By a decision of a competent authority or a court judgement which has entered into force and has become indisputable, the tenderer **has not been found guilty of** the violation of the labour law consisting in employment of a person without concluding a written employment contract, if it happens for the second time during a year, or concurrent employment of two or several persons without concluding a written employment contract, **or 18 (eighteen) months have passed from the day, when a court judgement or a decision of a competent authority entered into force and became indisputable, to the day of submission of the tender.**

32.3. By a decision of a competent authority or a court judgement which has entered into force and has become indisputable, the tenderer **has not been found guilty of** the violation of the competition law in the form of a vertical agreement the purpose of which is to restrict the buyer's possibility to determine the resale price, or in the form of a horizontal cartel agreement unless the competent authority has secured the Tenderer's immunity from fines when discovering the violation of the competition law, **or 12 (twelve) months have passed from the day, when a court judgement or a decision of a competent authority entered into force and became indisputable, to the day of submission of the tender.**

32.4. Insolvency proceeding with regard to the Tenderer **have not been announced**, the Tenderer's economic activity has not been suspended or interrupted, proceedings have not been initiated regarding the Tenderer's bankruptcy and it has not been stated that the Tenderer will be liquidated until the intended deadline for performance of the contract.

32.5. The Tenderer **has no tax arrears,** including state mandatory social security contribution arrears in Latvia or in the country it is registered or permanently resides (if it is not registered in Latvia and its permanent place of residence is not Latvia), the total amount of which in each country exceeds 150 euro.

32.6. The Tenderer **has submitted** all the requested information and the information submitted to certify the compliance of the Tenderer with the qualification requirements is true.

33. All the requirements of the rules of participation referred to in Paragraph 32 of these regulations are also applicable to the subcontractor whose opportunities the Tenderer relies upon to confirm that the Tenderer's qualification meets the requirements of the Procurement Documents. These requirements are applicable to all the members of the association of persons, if the tender is submitted by an association of persons.

34. The Tenderer, including the association of persons (if the tender is submitted by an association of persons), will not be considered complaint with the rules of participation in the procurement procedure and will be excluded from participation in the procurement procedure also in the case, if the tenderer or any member of the association of persons does not comply with the rules of participation in the procurement procedure defined in Paragraph 32 of these regulations.

QUALIFICATION REQUIREMENTS

35. The Tenderer shall have sufficient technical and human resources at its disposal to deliver the products and to provide the services under this procurement in/within the requested scope, quality and deadline.

36. The Tenderer should have experience in the delivery and installation of vessel traffic management systems:

Over the last 3 (three) years (2012, 2013, 2014, 2015) at least one vessel traffic management system should be delivered and installed, which should include at least 3 (three) new radars (land-based), which meet the requirements defined in the document – Operational and Technical Performance Requirements for VTS Equipment, Edition 3.0, June 2007, IALA.

37. Over the last 3 (three) years (2012, 2013, 2014, 2015) the annual turnover should be no less than 2,000,000 (two million) euro, excluding VAT. In the association of persons or when relying upon abilities of subcontractors to certify qualification requirements the financial turnover shall be summed up.

The Tenderer, which was established later than three years ago, should have the annual turnover in the period of its operations no less than 2,000,000 (two million) euro, excluding VAT.

38. The Tenderer (in the case of an association of person – each its member) may rely upon abilities of subcontractors to certify that the Tenderer's qualification meets the requirements of the Procurement Documents, as well as to involve subcontractors in the performance of the contract.

MANDATORY DOCUMENTS TO BE SUBMITTED

39. To certify compliance with the rules of participation in the procurement procedure and compliance with the Tenderer selection requirements, the Tenderer, each member of the association of persons (if the tender is submitted by an association of persons) should certify its documents and submit the following certifications, documents issued by a competent authority (certificates, statements, licences, permits) and other requested information:

39.1. A certification that the Tenderer, each member of the association of persons and the subcontractor, whose abilities the Tenderer relies upon to certify its compliance with the Tenderer qualification requirements, meets all the requirements of the rules of participation defined in sub-paragraphs of Paragraph 32 of the Procurement Documents.

39.2. A statement issued by a competent authority which certifies signatory rights of officials of the Tenderer and the subcontractor, whose abilities the Tenderer relies upon to certify its compliance with the Tenderer qualification requirements, as well as that it has not been announced insolvent and is not undergoing liquidation.

If the tender is submitted by an association of persons, this statement should be submitted by all members of the association of persons.

39.3. Originals of powers of attorneys or copies of powers of attorneys certified by the Tenderer, if the documents submitted by the Tenderer, an association of persons or a member of the association were signed by a person, which has no right to represent the Tenderer, the association of persons, its member or subcontractor.

39.4. A Tenderer's certification that over the last 3 (three) years (2012, 2013, 2014, 2015) it has delivered and installed at least one vessel traffic management system, which includes at least 3 (three) new radars (land-based), which meet the requirements defined in the document – Operational and Technical Performance Requirements for VTS Equipment, Edition 3.0, June 2007, IALA.
In addition to these certifications, references of the suppliers indicated in the certification should be submitted, which certify that the above mentioned service was provided in high quality.
39.5. A Tenderer's certification that its annual turnover over the last 3 (three) years (2012, 2013, 2014, 2015) has been no less than 2,000,000 (two million) euro, excluding VAT.
37.6. A Tenderer's certification that during the performance of the procurement it will have sufficient technical and human resources at its disposal to perform the procurement contract in/within the requested scope, quality and deadline.
39.7. A statement issued by a competent institution (a tax administration authority) certifying that the tenderer and the subcontractor whose abilities the Tenderer relies upon to certify that its qualification meets the requirements specified in the Procurement Documents, have no tax arrears, including state mandatory social security contribution arrears in Latvia the total amount of which exceeds 150 (one hundred and fifty) euro.
A statement issued by a relevant foreign institution (a tax administration authority) certifying that the tenderer and the subcontractor whose abilities the Tenderer relies upon to certify that its qualification meets the requirements specified in the Procurement Documents, which are registered in a foreign country or their permanent location is in a foreign country, have no tax arrears, including state mandatory social security contribution arrears in the country concerned the total amount of which exceeds 150 (one hundred and fifty) euro. If the tender is submitted by an association of persons, this statement should be submitted by all members of the association of persons.
39.8. A statement of the State Labour Inspectorate which certifies that the Tenderer and the subcontractor, whose abilities the Tenderer relies upon to certify its compliance with the Tenderer qualification requirements, have not been punished for the violations of the labour law defined in Sub-Paragraph 32.2 of these procurement procedures in Latvia or in foreign countries.

If the tender is submitted by an association of persons, this statement should be submitted by all members of the association of persons.

40. The statements referred to in these regulations will be considered appropriate and valid only, if they were issued not earlier than 3 (three) months before the tender submission deadline.

41. If the Tenderer intends to rely upon abilities of other suppliers to ensure the performance of its obligations under the contract, the Tenderer should submit the list of subcontractors.

42. If the tender is submitted by an association of persons, an agreement protocol signed by persons representing all members of the association, which have the right to represent the members, should be submitted. The agreement protocol should state:

✓ the purpose and the period of operation of the association;

✓ the leading member and the authorised person, who is entitled to represent the association of persons in the procurement procedure, defend its interests, sign documents on behalf of the association of persons, submit the tender, sign the procurement contract, if the association of persons wins in the procurement procedure;
✓ the nature and scope of works to be performed by each member of the association;
✓ a confirmation that in case the procurement contract is concluded, members of the association bear joint responsibility for the performance of the duties defined in the procurement contract.
A power of attorney, by which the authorised person is appointed, signed by all persons having the right to represent members of the association, should be attached to the agreement protocol.
43. The tenderer should guarantee:
- Repayment of the advance payment to the Contracting Authority in the amount of the requested advance payment, which cannot exceed 20% from the offered contract price.
- A guarantee for the warranty period of 24 (twenty four) months in the amount of 1% (one per cent) from the contract price.

SUBMISSION AND OPENING OF THE TENDER

44. Tenders can be submitted in person or sent by post with the delivery and issue to the secretary of the Commission by 10:00 on 04 January 2016, to the Freeport of Ventspils Authority, Jana Street 19, Ventspils, Room 202, on working days from 8:00 to 12:00 and from 13:00 to 17:00, on Fridays until 16:00. When receiving tenders, the secretary of the Commission shall record the date and time of submission on the tenders.
45. The tenders, which have not been submitted according to the procedure defined in the Procurement Documents or have been submitted after the tender submission deadline, will not be accepted. The tenders, which are sent by post, including with a courier post, delivered to the address indicated by the Contracting Authority and issued to the secretary after the tender submission deadline, will be sent back to the submitter unopened.
46. Any supplier as a Tenderer can submit only 1 (one) tender in 1 (one) version. The Tenderer, who submits its tender in several versions, will be excluded from participation in the procurement procedure.
47. The tender shall be submitted in 2 (two) copies – 1 (one) original of the tender with an inscription "Oriģināls" (Original) and 1 (one) copy of the tender with an indication "Kopija" (Copy). If there are contradictions or ambiguities between the content of the original documents and the content of the copies of documents, the content of the original documents will be taken as a basis.
48. The Tenderer has the right to withdraw its tender or submit amendments to its tender before the Tender submission deadline without losing its bid bond. Documents for withdrawal or amendment of the tender shall be prepared, presented and submitted according to the same procedure as other tender documents, with an inscription on the package "Piedāvājuma grozījumi" (Amendments to the tender) or "Piedāvājuma

atsaukums" (Withdrawal of the tender). A withdrawal of the tender excludes the Tenderer from further participation in the procurement procedure.

49. The submission of a tender means the intent of the Tenderer to participate in the procurement in good faith and the acceptance of all the requirements included into the Procurement Documents. A tender is legally binding on the Tenderer, who submitted it.

50. Tenders will be opened on 04 January 2016 at 10:00 in the Freeport of Ventspils Authority, Jana Street 19, Ventspils, at the open tender opening meeting. The Commission will open all the tenders submitted in due time, before the final tender submission deadline.

PREPARATION AND PRESENTATION OF THE TENDER

51. All the documents of the tender should be developed, presented, including copies of original documents and translations of documents into Latvian, and bound together parts of the tender should be certified according to the Republic of Latvia Cabinet Regulation No. 916 of 28 September 2010 "Document Development and Presentation Procedure" and the requirements of the Procurement Documents. They should be completed, dated and signed using the forms offered by the Contracting Authority.

52. The Tenderer shall be responsible for thorough examination of the Procurement Documents, including amendments to the procurements documents, additional information about and explanations of the requirements defined in the Procurement Documents provided by the Contracting Authority, as well as for the acquisition of secure information regardless of conditions and liabilities, which can affect the amount or the type of the tender or the performance of works in any way. In case of mistakes or violations in the above mentioned obligations, no claim of the Tenderer to adjust the tender amount will be satisfied. It is believed that the Tenderer, by submitting its tender, has studied and is aware of the requirements of laws and regulations in force in the Republic of Latvia, which can in any way affect or concern the submitted tender, actions and activities of the procurement contract.

53. The Tender documents should be prepared and submitted in Latvian, in a printed form, they should be clearly legible, pages should be numbered, documents should be bound together and certified according to the regulatory enactments of the Republic of Latvia.

54. The Tender documents, which are submitted in other languages, should have a Tenderer's certified translation into Latvian attached. If the text of the original document differs from the translation of the text of this document into Latvian, the translation of this document into Latvian will be taken as a basis.

The Tenderer shall be responsible for the harm caused due to incorrect translation of any documents in the manner prescribed by laws and regulations of the Republic of Latvia.

55. All the submitted tender documents should be signed. The application of the Tenderer for participation in the procurement procedure and certifications should be signed by the person having the right to represent the Tenderer or by its authorised representative. In case of authorisation, the original power of attorney should be

attached. Other tender documents should be signed by the employee, who prepared the document concerned (specifying name, surname, and position).

56. Tender documents and Tenderer selection documents should be placed into a glued and sealed envelope with an inscription:

✓ "Ventspils brīvostas pārvaldei, Jāņa iela 19, Ventspils, LV-3601" (To the Freeport of Ventspils Authority, Jana Street 19, Ventspils, LV-3601);

✓ "Piedāvājums atklātam konkursam „VENTSPILS BRĪVOSTAS KUĢU SATIKSMES VADĪBAS SISTĒMAS MODERNIZĀCIJA", iepirkuma identifikācijas Nr. VBOP 2015/198 CEF" (Tender for the open tender "Modernisation of the Vessel Traffic Management System of the Freeport of Ventspils", procurement identification No. VBOP 2015/198 CEF), indicating name and surname, phone and fax number, e-mail address of the contact person;

✓ "Neatvērt līdz 2016.gada 04.janvāra plkst.10:00" (Do not open before 10:00 on 04 January 2016).

57. A table of contents must be inserted after the title page of the tender.

58. The tenderer shall cover all the expenses related to the development, preparation and submission of the tender. The Contracting Authority shall not be responsible for, shall not cover or compensate these expenses irrespective of the outcome of the Procurement Procedure.

SELECTION OF TENDERERS, VERIFICATION OF ELIGIBILITY AND SELECTION OF A TENDER

59. In accordance with the procedure envisaged in the Procurement Documents and according to their requirements and evaluation criteria, the Commission shall select Tenderers, verify the eligibility and choose tenders and shall be guided by them, when taking decisions on the compliance of the Tenderer with the selection requirements, the compliance of the proposed conditional contract price to the requirements of the Contracting Authority, competences and abilities of the Tenderer to ensure the performance of contractual obligations.

60. The Commission shall take decisions at a closed session, based only on the information included into original documents and copies of documents, and other information, which was requested and submitted before the tender submission deadline.

61. The Commission has the right to ask the Tenderer to update information about its tender, if it is required for the selection of Tenderers or for the verification of compliance and selection of tenders.

62. The Commission will not evaluate the tender submitted by the Tenderer, incl. an association of persons (if the tender is submitted by an association of persons), if the Tenderer or any member of the association of persons does not meet the requirements of the rules of participation in this procurement procedure.

63. The Commission shall select the most appropriate tender meeting the procurement criteria from the tenders of Tenderers, which were not excluded from the Procurement Procedure.

64. Before selecting a tender, the Commission shall verify financial calculations and correct arithmetic errors. If case of arithmetic errors, the contract price will be corrected.

65. The tender selection criterion is **the lowest price**.

66. If the Tenderer, who was preferred in the procurement procedure, withdraws its tender during its validity or does not conclude the procurement contract within the deadline specified by the Contracting Authority, the Commission will consider, whether it is possible to choose the Tenderer, who offered the next lowest price, as the preferred tenderer.

67. Before the conclusion of the procurement contract the Contracting Authority has the right to interrupt the procurement procedure, if it has grounds for that.

TECHNICAL OFFER

68. The technical offer should include:

68.1. A Tenderer's certification that all the delivered equipment and hardware, as well as performed works will be provided a 2 (two) year warranty. A maintenance plan for the equipment and hardware for a 2 (two) year period should be submitted in addition to the certification.

68.2. The information prepared by the Tenderer about the technical compliance of the radars to be supplied with the requirements referred to in Item 25.4 of the Technical Specification and Table No. 1 – technical parameters of radars (completed Table No. 1 should be submitted).

68.3. A Tenderer's certification that the delivered equipment and hardware will meet the characteristics of equipment and hardware defined in Tables No. 2, No. 3, No. 4, No. 5, No. 6 of the Technical Specification.

68.4. The information prepared by the Tenderer about technical compliance of the multi-target tracking processor to be supplied with the requirements referred to in Item 31 of the Technical Specification and Table No. 7 – Functional and performance requirements to the Target tracking processor (completed Table No. 7 should be submitted).

68.5. A contract performance schedule broken down by months, including all the product delivery and service performance phases in sequence.

68.6. A description of fulfilment of the technical specification according to the requirements of these regulations according to Annex No. 2.

68.7. A certification that the Tenderer will use the quality assurance system ISO 9001 or equivalent. A certification that firmware will correspond to ISO 9003 or an equivalent quality assurance system. In addition to these certifications, the Tenderer shall submit a copy of its ISO certificate, or a description of procedures and instructions of other equivalent quality management system.

68.8. A payment order approved by the bank about the transfer of the tender security deposit, or a copy of a bank guarantee (original) should be attached to the tender unbound.

68.9. A certification of a bank or an insurance company, that in case the procurement contract is concluded with the Tenderer, the bank or the insurance company will issue:

- a security deposit for unconditional repayment of the advance payment in the amount of the advance payment requested by the Tenderer (excluding VAT), if the works are not performed in the amount of the advance payment or the advance payment is not repaid.

– an unconditional guarantee for the warranty period of the object in the amount of 1% (one per cent) from the contract price of the object, counting from the day of signature of the acceptance and delivery protocol of the object, guaranteeing payment of compensation to the Contracting Authority at its first request, if the performer of the works does not eliminate the defects in works or has stopped its operations during the warranty period.

If the tender is submitted by an association of persons, the certification of an insurance company should be submitted for each member of the association of persons.

FINANCIAL OFFER

69. The financial offer should include:

69.1. Tenderer's application according to Annex No. 1;

69.2. Information about the advance payment, if any;

69.3. The advance payment cannot exceed 20% from the offered contract price;

69.4. A certification that the financial calculations were prepared and submitted according to the requirements of the Procurement Documents, that the contract price includes all the costs necessary for full performance of the procurement, as well as costs, which might and must have been anticipated, taxes (excluding VAT) and fees to be paid by the supplier as a businessman;

69.5. A cash flow schedule broken down by months, including all the product delivery and service performance phases in sequence and the amount of funds intended for them.

70. Calculations of the contract price and costs should be specified in euro, excluding VAT.

CONCLUSION OF THE PROCUREMENT CONTRACT

71. The procurement contract shall include the following provisions of these Regulations.

72. The Contracting Authority has the right to conclude the procurement contract with the preferred tenderer in the procurement on the next day after the expiry of the waiting period. The contract should be concluded within 5 (five) working days from the Contracting Authority's written request.

73. If the preferred tenderer of this procurement refuses to conclude the procurement contract, the Contracting Authority shall decide on the conclusion of the contract with the Tenderer, who offered the next lowest price, provided that the proposed contract price does not exceed the financial resources intended for this procurement and that both the Tenderer and the submitted tender have been recognised compliant with the requirements of the Regulations.

74. The scope of supply and service can be reduced, if it is found during the performance of the procurement contract that they are not necessary in the scope

indicated in the cost estimates of the contractor. In these cases, settlements for the performed deliveries and provided services shall be made based on actual performance.

75. If the procurement contract is concluded with a group of persons, it shall be signed by each member of this group of persons. In this case the procurement contract shall be supplemented with a provision that members of the group are jointly responsible for the performance of duties and obligations under this contract, as well as for any inflicted losses.

ANNEXES

76. The following annexes are attached to these regulations:

76.1. Tenderer's application (Annex No. 1).

76.2. Technical specification (Annex No. 2).

76.3. Draft contract (Annex No. 3).

76.4. List of subcontractors and subcontractor's certification forms (Annex No. 4).

76.5. Cost estimate of works (Annex No. 5).

Annex No. 1
to the Regulations of the open tender "MODERNISATION OF THE VESSEL TRAFFIC MANAGEMENT SYSTEM OF THE FREEPORT OF VENTSPILS"
Procurement identification No. VBOP 2015/198 CEF

Tenderer's application for the open tender
MODERNISATION OF THE VESSEL TRAFFIC MANAGEMENT SYSTEM OF THE FREEPORT OF VENTSPILS, id. No. VBOP 2015/198

By submitting this application, I hereby apply for participation in the open tender "MODERNISATION OF THE VESSEL TRAFFIC MANAGEMENT SYSTEM OF THE FREEPORT OF VENTSPILS", procurement identification No. VBOP 2015/ 198 CEF", on behalf of the Tenderer.

Tenderer's name	_____
Registration No.	_____
Bank	_____
Bank account	_____
Registered address	_____
Contact person	_____

/surname, position, phone, fax, e-mail address/

We hereby certify that we have studied and recognize provisions of the Open Tender Regulations as correct, agree to participate in the procurement and guarantee the performance of the requirements of the open tender regulations. Terms and conditions of the open tender regulations are clear and understandable, we have no objections or claims. We understand that you can accept or reject any tender as well as to annul the results of the open tender and to reject all the tenders at any time before the winner is determined.
We confirm that we have sufficient information at our disposal about the scope, specifics, performance deadlines of the deliveries and services under this procurement.
We certify that the Tenderer has sufficient legal capacity to conclude the procurement contract according to the job assignment of this procurement and requirements of other procurement documents, that the tender has been prepared according to the requirements of the Procurement Documents and undertake to perform the procurement contract for:

Contract price, (excluding VAT)	_____	**EUR**
VAT 21%,	_____	**EUR**
Contract price, (including VAT)	_____	**EUR**

We hereby certify that the submitted data are complete and true.
We undertake to perform the contract within the set deadline.
By submitting this application, we are aware and fully undertake all the risks and responsibility with regard to the submitted application.
If our tender has the lowest price, we guarantee to perform the procurement contract in/within the requested scope, quality and deadline.
The validity of the tender is 150 days after the tender submission deadline, but if our tender is recognised the most beneficial – it is valid till the conclusion of the procurement contract.

_____

(name, surname, signature, position of the person having representation rights)

Annex No. 2
to the Regulations of the open tender "MODERNISATION OF THE VESSEL TRAFFIC MANAGEMENT SYSTEM OF THE FREEPORT OF VENTSPILS"
Procurement identification No. VBOP 2015/198 CEF

MODERNISATION OF THE VESSEL TRAFFIC MANAGEMENT SYSTEM OF THE FREEPORT OF VENTSPILS

TECHNICAL SPECIFICATION

17

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Abbreviations

AIS – Automatic Identification System

ARPA – Automatic Radar Plotting Aid

ASL – Above Sea Level

CCTV – Closed Circuit Television

COTS – Commercial off-the-shelf

CPA – Closest Point of Approach

EIA – Electronics Industry Association

ETA – Estimated Time of Arrival

ETD – Estimated Time of Departure

IALA – International Association of Marine Aids to Navigation and Lighthouse Authorities

IEC – International Electrotechnical Commission

IEEE – The Institute of Electrical and Electronics Engineers

IMO – International Maritime Organization

ISO – International Organization for Standardisation

ITU – International Telecommunication Union

VTS – Vessel Traffic Management Service

VTMS – Vessel Traffic Management System

MMSI – Maritime Mobile Service Identity

MW – Micro Wave

nm – Nautical Mile

RDF – Radio Direction Finder

TCPA – Time of Closest Point of Approach

UPS – Uninterruptible Power Supply

VHF – Very High Frequency

X-band – 8.0–12.0 GHz

WMO – World Meteorological Organization

1. Background

The Vessel Traffic Service (VTS) is operating according to Chapter V – Safety of navigation of SOLAS (Safety of Life at Sea) Convention and Resolution A.857(20) Guidelines for Vessel Traffic Services of the International Maritime Organization.
The task of the VTS is to promote safety of life at sea, safety and efficiency of navigation and protection of the marine environment.
The VTS should be able to create a comprehensive review of vessel traffic within the area of its responsibility, including all the factors affecting traffic. A comprehensive reflection of the traffic of vessels allows VTS operators to assess the situation and to take proper decisions. The VTS receives information about the traffic of vessels from the set of hardware – the vessel traffic management system (VTMS).

2. Purpose of the project

To upgrade and modernise the existing VTMS to improve the safety of navigation in the area of responsibility of Ventspils VTS, to perform uninterrupted digital recording of the traffic of vessels, to increase the capacity to act of the Port of Ventspils in unexpected situations. The area of responsibility of Ventspils VTS is from the outer roadstead to the second bridge across the River Venta from the side of the sea.

3. General provisions of the project

The VTMS should be modernised by installing new hardware using the existing infrastructure. The modernisation of the VTMS and the upgrading of its hardware should be performed without interrupting the operation of the VTMS.
The VTMS should not disturb or negatively affect the operation of surrounding GMDSS (Global Maritime Distress and Safety System), GSM (Global System for Mobile Communications) and TV (Television) systems.
Remote management and control of remote locations should be organised from the Vessel Traffic Service Management Centre of the Freeport of Ventspils Authority in Ventspils, Krisjana Valdemara Street 14.

4. Standards

All the components and materials of equipment and hardware should be designed, manufactured and tested according to the latest revisions of the standards, regulations and recommendations listed below:

- IMO resolutions
- ITU-R recommendations
- CEPT standards
- IEC standards,
- ETSI/CENELEC standards
- IALA recommendations
- IEE wiring regulations.

Specific standards and regulations for individual equipment are indicated in their technical specifications.

5. Conformity assessment

The AIS coastal station, the receiver of the global positioning system and the radar should have type certificates issued by authorised institutions according to Directives 96/98EC or 1999/5/EC of the European Union.
The conformity of equipment to regulatory enactments of the Republic of Latvia is ensured by the *AS Elektroniskie sakari*, Eksporta Street *(Eksporta iela)* 5, Riga, Latvia.

6. Warranty and service life

All the delivered equipment and hardware should have a 2 (two) year warranty.
The contractor should deliver hardware with all the necessary materials and components to ensure maintenance of this hardware according to the maintenance plan for a 2 (two) year period.
All the delivered equipment and hardware should be able to operate in Latvian climatic conditions for at least 20 (twenty) years.
Foundations, brackets, adjustment parts, service platforms, containers of antennas or hardware to be installed in the Vessel Traffic Service Management Centre, on the roof of the building of Association of Fishermen of Northern Kurzeme in Ventspils, Sarkanmuizas dambis *(Sarkanmuižas dambis)* 29b, Southern RS1, on the existing radar masts, on the existing mast of the radio direction finder should be able to operate in Latvian climatic conditions for at least 20 (twenty) years.

7. Availability

The project of the system should envisage easy access to the equipment for maintenance and repair.

8. Offer of the system

The Tenderer should supply a modern, field-proven system, which is already being used and does not require further research or improvement. The delivered system should meet the requirements defined in the document – Operational and Technical Performance Requirements for VTS Equipment, Edition 3.0, June 2007, IALA.
Commercial off-the-shelf (COTS) software and hardware should be used to construct the system.

9. Labelling

All the labelling and engravings must be waterproof, all the designations must consist of international symbols, inscriptions must be in English. Each cabinet, block and assembly of equipment, including cables, must be marked for easy identification.

10. Protection of equipment

Appropriate protection of the equipment should be provided in such a way that a fault in one assembly or part of the VTMS does not cause faults in other assemblies of the VTMS. Protection of the equipment should also be provided in such a way that an erroneous (incorrect) installation of a replaceable block does not cause a fault. Special attention should be paid to lightning protection, overvoltage protection and returned power of the equipment. The tender should describe protection methods of the proposed equipment.

11. Repairability and troubleshooting of the equipment

Equipment should be designed in such a way that it is easily repairable. Recommended preventive inspections and repairs, recommended inspection intervals, as well as methods of troubleshooting and locating faults should be described in the technical documentation.

12. Works for dismantling and installation of equipment

12.1. The Contractor shall completely dismantle and mount the equipment, supervise works, provide shop drawings, necessary work procedures and methods, which ensure dismantling and installation of the equipment according to standards, manufacturer's instructions and labour safety requirements.
12.1.1. The equipment to be dismantled and to be installed should be listed in the cost estimate. The dismantling and installation of the equipment should be gradual – one after another or in parallel to such equipment only, which does not disturb the operation of the system.
12.1.2. Prior to dismantling of any equipment, the Contractor shall inform the Contracting Authority in writing and receive a written permit of the contracting authority to dismantle the equipment.
12.1.3. Prior to installation of any equipment, the Contractor shall inform the Contracting Authority in writing and receive a written permit of the contracting authority to dismantle the equipment. The Contracting Authority should receive the permit to install the equipment from the *AS Elektroniskie Sakari*.

12.2. The Contractor should dispose of dismantled equipment.

12.3. Equipment to be dismantled does not include the radar mast in Ventspils, Dienvidu mols 5, in the premises (building) of the Vessel Traffic Service Management Centre in Ventspils, Krisjana Valdemara Street 14, Southern RS1, as well as the mast of the radar and the radio direction finder in Ventspils, Krisjana Valdemara Street 14. Also, the equipment to be dismantled does not include power inlet cables in Ventspils, Krisjana Valdemara Street 14 and Southern RS1. No

dismantling of any structures is envisaged on the roof of the building of Association of Fishermen of Northern Kurzeme in Ventspils, Sarkanmuizas dambis 29b, it is only necessary to install a mast of the radar and the radio direction finder. In Ventspils, Sarkanmuizas 29b, installation foundations, brackets, adjustment parts, service platforms, containers of antennas or hardware is envisaged.

13. Factory Acceptance Test (FAT)

13.1. A Factory Acceptance Test is required before the delivery of any equipment. The purpose of the test is to make sure that the manufactured equipment meets the standards defined in the technical specification.

13.2. 5 (five) weeks before the Factory Acceptance Test, the Contractor shall send technical descriptions of the equipment to the *AS Elektroniskie sakari*, and shall request a conformity assessment of the equipment.

13.3. 4 (four) weeks before the Factory Acceptance Test, the Contractor shall send an invitation to the Contracting Authority, which notifies of the place, date and time of the tests. A technical description of the equipment and the programme of tests should be attached to the invitation to equipment tests, the equipment to be tested should be listed, testing methods, procedures and tools used should be described in detail, a sample equipment testing protocol should be attached. The Contracting Authority should be trained to accept the equipment, when necessary. The Tenderer shall envisage in its tender covering of all the costs related to business trips of 2 (two) representatives of the Contracting Authority (transport, accommodation and other costs). Two weeks before the Factory Acceptance Test, the Contracting Authority and the Contractor shall coordinate the plan of equipment tests, the Contracting Authority shall appoint 2 (two) representatives, who will test the equipment.

13.4. Before the Factory Acceptance Test, the Contractor shall inform the Contracting Authority about conformity of the equipment based on the reply of the *AS Elektroniskie sakari* on compliance of the equipment in the Republic of Latvia.

13.5. The Contractor should ensure Factory Acceptance Tests according to the plan of Factory Acceptance Tests.

13.6. The protocol of the Factory Acceptance Test shall be signed by both parties, the conclusion regarding conformity of the manufactured equipment can be positive or negative. Representatives of the Contracting Authority should receive 3 (three) copies of the protocol of the Factory Acceptance Test.

13.7. If the Contracting Authority does not accept the conformity of manufactured equipment, the Contractor shall eliminate any defects and perform the procedure of the Factory Acceptance Test again.

13.8. All the possible costs of repeated Factory Acceptance Tests shall be covered by the Contractor (transportation, accommodation, training, when necessary, repeated tests, working hours of other personnel should also be paid, if it is not the manufacturer's personnel).

13.9. The Contracting Authority can terminate the contract immediately, if the Contractor has not been able to fulfil the requirements of the plan of the Factory Acceptance Test or ensure conformity of the equipment to the regulations of the Republic of Latvia for 3 (three) times.

14. VTMS Installation Temporary Acceptance Test (ITAT)

Upon completion of mounting of the equipment, the Installation Temporary Acceptance Test (ITAT) is performed according to the plan of the VTMS Installation Temporary Acceptance Test prepared by the Contractor and approved by the Contracting Authority. If no faults or non-compliances are found during the VTMS

Installation Temporary Acceptance Test, the protocol of the VTMS Installation Temporary Acceptance Test shall be signed. The protocol should consist of 2 (two) parts – a VTMS mounting completion part and a VTMS operational capability inspection part.

14.1. Any installed equipment or an equipment unit and the operational capability of the VTMS in general should be included into the Installation Temporary Acceptance Test.

14.2. As soon as the Contractor believes that installation of any equipment is complete and meets the specification, the Contractor shall inform the Contracting Authority.

14.3. At least 4 (four) weeks before the expected VTMS test, the Contractor shall submit to the Contracting Authority a plan of the VTMS Installation Temporary Acceptance Test, which should include the inspection of each individual equipment and all the other necessary tests of VTMS. This plan should also state the methods and tools to be used.

14.4. The Contracting Authority shall review the plan of the VTMS Installation Temporary Acceptance Test and shall make the necessary corrections, where appropriate. No later than 2 (two) weeks before the VTMS Installation Temporary Acceptance Test the Contracting Authority shall send the plan of the VTMS Installation Temporary Acceptance Test back to the Contractor. If there are no more corrections, the Contractor shall draw up the final report and the parties shall coordinate the VTMS Installation Temporary Acceptance Test. The Contractor shall submit the harmonised version no later than 1 (one) week before the VTMS test.

14.5. Upon the Contracting Authority's request, the Contractor shall provide the Contracting Authority's personnel with the instruction of the VTMS Installation Temporary Acceptance Test so that the people appointed by the Contracting Authority understand the activities of the Contractor. The Contractor shall perform mounting completion tests in the presence of persons appointed by the Contracting Authority.

14.6. The Contractor together with the Contracting Authority's representatives complete the VTMS mounting completion part of the protocol and the VTMS operational capability inspection part of the protocol.

14.7. Upon the Contracting Authority's request, the Contractor shall allow the Contracting Authority to perform the tests according to the instructions of the VTMS Installation Temporary Acceptance Test.

14.8. If no faults or non-compliances are found during the Installation Temporary Acceptance Test of operational capability of the equipment and VTMS, the Contractor and the Contracting Authority shall sign the VTMS operational capability inspection part of the protocol.

14.9. Each party should keep a copy of the acceptance and delivery protocols of the VTMS Installation Temporary Acceptance Test.

14.10. Any costs related to additional or repeated tests, if any, shall be paid by the Contractor. Working hours of other persons, if this is not the Contractor's personnel, shall be paid as well.

14.11. The Contracting Authority should receive the permit to operate the equipment from the *AS Elektroniskie sakari*.

14.12. If the Contractor and Contracting Authority have signed both parts of the Installation Temporary Acceptance Test protocol, the operators of the Vessel

Traffic Service Management Centre of the Freeport of Ventspils Authority should start using the VTMS.

15. VTMS Site Acceptance Test (SAT)

15.1. 6 (six) months after signature of the protocol of the VTMS Installation Temporary Acceptance Test, the Contracting Authority shall perform the VTMS Site Acceptance Test (SAT).
The purpose of the 6 (six) month period is to state and resolve problems in the operation of the VTMS, which were not discovered during the VTMS Installation Temporary Acceptance Test. If no errors or faults are found during the VTMS Site Acceptance Test, the protocol of the VTMS Site Acceptance Test shall be signed.

15.2. At least 4 (four) weeks before the VTMS Site Acceptance Test the Contractor shall submit the plan of the VTMS Site Acceptance Test to the Contractor. This plan should state the date and time of the VTMS Site Acceptance Test, the methods and tools to be used in the VTMS Site Acceptance Test.

15.3. The Contracting Authority shall review the plan of the VTMS Site Acceptance Test and shall make the necessary corrections, where appropriate. The Contractor shall draw up the final report and the parties shall coordinate the VTMS Site Acceptance Test. The Contractor shall submit the harmonised version no later than 1 (one) week before the beginning of the VTMS Site Acceptance Test.

15.4. Upon the Contracting Authority's request, the Contractor shall provide the Contracting Authority's personnel with the instruction of the VTMS Site Acceptance Test so that the people appointed by the Contracting Authority understand the activities of the Contractor. The Contractor shall perform the VTMS Site Acceptance Test in the presence of persons appointed by the Contracting Authority.

15.5. Upon the Contracting Authority's request, the Contractor shall allow the Contracting Authority to perform the tests according to the instructions of the VTMS Site Acceptance Test.

15.6. After the VTMS Site Acceptance Test, the Contractor together with representatives of the Contracting Authority shall complete the protocol of the VTMS Site Acceptance Test.

15.7. If non-compliances with the plan of the VTMS Site Acceptance Test, problems in operation of VTMS or in hardware checks are found during the Site Acceptance Test, the Contractor shall eliminate them and repeat the VTMS Site Acceptance Test. The operation of the VTMS must comply with the requirements described in the plan of the Site Acceptance Test of VTMS.

15.8. Any costs related to additional or repeated tests shall be paid by the Contractor. Working hours of other persons, if this is not the Contractor's personnel, shall be paid as well.

15.9. The date of signature of final acceptance and delivery protocol of VTMS is the beginning of the 2 (two) year warranty period.

16. Technical support during the warranty period

The Tenderer shall include an offer of technical support for the warranty period in its tender. Consultations of a technical specialist by phone should be available in English or in Latvian 24/7 on any day of the week, including weekends and holidays. The Contractor should provide the possibility to remotely connect to the VTMS to perform diagnostics and find faults in the system's operation. If faults in the VTMS's operation cannot be corrected remotely, the technical specialist of the Contractor should arrive to the VTMS centre personally no later than within 3 (three) working days from the moment, when the Contracting Authority has informed the Contractor about a fault or a damage in the operation of VTMS. The Tenderer should specify in its offer a phone number and an e-mail for reporting of system damages and faults, as well as for the provision of technical consultations. System damages or faults (if impossible to correct remotely) should be corrected by the Contractor within 5 (five) calendar days after the arrival of the technical specialist.

17. Training of Contracting Authority's personnel

17.1. General requirements

The purpose of the training is to ensure that the delivered equipment is operated and maintained according to the manufacturer's requirements.
The Contractor shall train personnel of the Contracting Authority to operate and maintain the system. Trainings should be provided in Latvian and English. All materials and documentation of courses should be provided in 3 (three) copies in each language.

17.1.1. Operators should have/learn at least:

17.1.1.1. good knowledge of the general concept and design of the system;
17.1.1.2. extended knowledge of operation of system components.

17.1.2. Technical personnel should have/learn at least:

17.1.2.1. perfect knowledge of the concept and design of the system;
17.1.2.2. extended knowledge of operation of system components;
17.1.2.3. routine inspection and adjustment procedures;
17.1.2.4. routine preventive inspection procedures;
17.1.2.5. troubleshooting procedures up to the block level of the equipment.

Trainings should consist of a theoretical part, where the trainees are provided respective theoretical knowledge, and a practical part. The Contractor should cover all the costs related to the trainings. The Contracting Authority shall appoint operators and technical personnel to be trained.
Trainings should take place before the Installation Temporary Acceptance Test (ITAT).
Costs of trainings, including any changes in them, should be indicated in the Cost estimate of works.

17.2 Training of operators

15 operators should be trained. The proposed duration of the training shall be 1 (one) week. Both theoretical and practical trainings should be held in the premises of the Ventspils Vessel Traffic Service Management Centre in Ventspils, Krisjana

Valdemara Street 14. The proposed time of the training shall be 1 (one) week before the Installation Temporary Acceptance Test (ITAT).

17.3 Training of technical personnel

1 (one) technical manager of the system and 2 (two) technicians should be trained before mounting works of the system start. The proposed time of the training shall be 1 (one) week.

17.4 Approval, certification of the training programme

1 (one) month before the training begins the Contractor shall submit to the Contracting Authority the training programme, the plan and materials for coordination and approval. Certificates should be issued to the trainees after they complete the training.

18. VTMS testing hardware and special tools

The Tenderer shall include into its tender the list of testing hardware and tools indicating the recommended type, manufacturer, technical data and price:

18.1. Hardware and tools necessary to ensure operation and to troubleshoot the VTMS;

18.2. Hardware and tools necessary to repair the VTMS.

19. Work performance project, technical drawings and manuals

19.1. Within 1 (one) month after the conclusion of the contract the Contractor shall submit to the Contracting Authority a work performance project. The work performance project should include the list of equipment to be dismantled and to be installed and the time schedule. The work performance project shall also include specifications, calculations and mounting sketches for the equipment. The Contracting Authority shall review them within two weeks and provide its opinion. If the Contracting Authority has any objections, the Contractor shall eliminate any shortages in the work performance project within 3 (three) weeks. The work performance project should be coordinated with the Contracting Authority prior to starting any equipment dismantling or installation works.

19.2. At least 4 (four) weeks before the expected VTMS Installation Temporary Acceptance Test (ITAT), the Contractor shall submit to the Contracting Authority technical drawings, operating, maintenance manuals and all the necessary documentation with regard to the operation and maintenance of the VTMS. All the equipment supplied within the scope of the contract should have the documentation, which contains all the necessary information about safe operation and the necessary maintenance of the equipment.
The documentation shall include, but is not limited to:

19.1. structural and detail drawings of the system;

19.2. description of operation of each equipment up to the block level;
19.3. single line diagrams from the manufacturer of equipment;
19.4. parameter measurement points for equipment and measurement values;
19.5. full list of parts of each equipment with catalogue numbers;
19.6. full list of spare parts with catalogue numbers;
19.7. technical manuals of equipment;
19.8. maintenance manuals of equipment;
19.9. technical maintenance plan – specific information and instructions with regard to maintenance and preventive repair of equipment;
19.10. wiring diagrams from the entrance cable (from the external mains) to the terminal point in the hardware.

The quality of documents should be fit for long-term use, it should be hard-bound, clearly marked and indexed. 2 (two) sets of documentation, a hard copy and a soft copy (on a USB stick) should be submitted.

20. VTMS and equipment testing documentation

The Contractor shall submit to the Contracting Authority the documentation containing test results for all the equipment, which were carried out as a part of the Factory Acceptance Test (FAT), the Installation Temporary Acceptance Test (ITAT), the Site Acceptance Test (SAT). Documents with test results should be submitted in 3 copies no later than within one week after the completion of each test.

21. Quality assurance, requirements to the contractor

21.1. Quality assurance

A certificate of an ISO 9001 quality assurance system or an equivalent quality assurance system should be presented. In addition, it is requested that firmware corresponds to ISO 9003 or an equivalent quality assurance system. The Tenderer shall submit a copy of its ISO certificate, or a description of procedures and instructions of other equivalent quality management system in its tender.

21.2. Requirements for the contractor

The Contractor should implement a ready-to-use VTMS within 18 (eighteen) months from the conclusion of the contract, which is certified by the final VTMS acceptance and delivery protocol signed by the Contractor and the Contracting Authority.
Contractor's obligations include, but are not limited to the following liabilities:

3.2.1. The necessary inspections of sites and the development of a work performance project.
3.2.2. The delivery of all necessary hardware, antennas, cables, computers, servers (with software), etc. together with accessories.
3.2.3. Development of technical drawings and manuals of the hardware to be installed.
3.2.4. Gradual dismantling works for the existing system, installation works

management and supervision of works, tests of equipment and start of the VTMS operation until the Installation Temporary Acceptance Test protocol for VTMS is signed and then until the Site Acceptance Test protocol for VTMS is signed.

3.2.5. Training of operators and technical personnel.

3.2.6. Provision of technical documentation in Latvian and English.

3.2.7. Technical support during the 2 (two) years warranty period.

3.2.8. The Contractor should deliver foundations, brackets, adjustment parts, service platforms, containers of antennas or hardware to be installed in the Vessel Traffic Service Management Centre, on the roof of the building of Association of Fishermen of Northern Kurzeme in Ventspils, Sarkanmuizas dambis 29b, Southern RS1, on the existing radar masts, on the existing mast of the radio direction finder and their costs should be included into total costs of the contract. When installed, with installed hardware, brackets, masts or containers, they should be able to withstand the wind load up to 180 km/h, the ambient temperature range from -40° to +55°C, air humidity up to 100%, exposure to sun, rain, snow, ice and hail. Structural integrity calculations should be stated in sketches of these foundations, brackets, adjustment parts, service platforms in the work performance project. Materials which are corrosion proof or materials treated against corrosion should be used in manufacturing of these parts. Corrosion protection materials and methods should be stated in sketches of these foundations, brackets, adjustment parts, service platforms in the work performance project. The corrosion-proof coating of the foundations, brackets, adjustment parts, service platforms, containers of hardware to be installed outside (not inside) should be zinc-plated. Additional corrosion-proof layers can be used, when necessary.

3.2.9. Any hardware, accessories, mounting materials and any additional works and services, which are not listed in this technical specification, but are required for commissioning of a ready-to-use VTMS, are included into this contract and the Contractor should provide them without additional payment.

3.2.10. Construction-related permits (when necessary) should be obtained and harmonised by the Contractor.

22. General technical requirements

22.1. Operation of VTMS

Any operational activities in any VTMS assembly should not affect the work of any other VTMS assembly.

22.2. Hardware operation failures and backups

Failures of individual VTMS components should not cause the failure of the entire VTMS. Hardware should be sufficiently backed up to keep VTMS operating.
The Contractor should identify all the components of VTMS and provide an analysis, how damages to each component affect general operation of the VTMS.

The hardware should be operational with a long-term voltage deviation within 10% of the rated voltage and a long-term frequency deviation within 5% of the rated frequency.

22.3. Electrical power supply

The Contractor should indicate detailed electrical power requirements at all hardware installation sites. The Contractor should lay new wiring from the hardware terminal point to the external mains (to the entrance cable). The Contractor should design this wiring and the Contractor should submit the wiring diagram to the Contracting Authority.

22.4. Environmental impact

Rooms, in which hardware is installed should be equipped with air conditioners/heaters. The required number should be indicated in the project. The design power should provide +23°C in the rooms, where the hardware is installed, with the maximum outdoor temperature of +55°C and the minimum outdoor temperature of -40°C.
Regardless of that, indoor hardware should be operational in the temperature range from 0° to +40°C and at air humidity 95%.
Outdoor hardware should be operational at wind speed of 140 km/h, air humidity up to 100% and in the temperature range from -40° to +55°C. The hardware should not be damaged by wind speeds up to 180 km/h.
Containers, in which hardware is installed, should be equipped with air conditioners/heaters to ensure temperature in the container, which is appropriate for operation of the hardware. Heat insulation of containers and the necessary number of conditioners/heaters should be stated in the work performance project, Latvian climatic conditions should be taken into account. Temperature should be maintained in the container automatically. The container of the emergency diesel generator should be equipped with air conditioners/heaters.

22.5. Radiation safety

The Contractor should provide detailed information about safe use of radar and VHF radio station hardware.
Prior to installation, the Contractor should ensure preventive safety with radar to radiation emissions from radar and VHF radio station hardware.

22.6. Availability and safety of VTMS equipment

Operational availability due to critical failures of VTMS (except for failures as a result of external causes) should be no less than 99.9%, counting the average break in operations of 1 hours during each break.
No system data should disappear in case of hardware or software faults.
VTMS should be protected from unauthorized access. On the workstations, from which operational functions will be performed, access to the system should be protected with an operator's password.
The Contractor determines, which system adjustments require an administrator's password.

The Contractor should indicate, which hardware should be installed in rooms for security reasons.
Containers should be closed, labelled with respective warning marks according to labour safety requirements.

22.7 Diagnostics and maintenance

VTMS should have a widely used diagnostics to analyse faulty operations and processes. Messages about faults in operation should be displayed at all workstations. The delivered VTMS should have a self-diagnostics function and integrated test equipment.

23. Description of the current VTMS

The current Ventspils VTMS was created on 24 October 1998, manufactured by STN Atlas Elektronik (Bremen, Germany), system name VTS 9730. Part of spare parts of the system are not produced anymore.

The hardware is currently deployed on two sites.

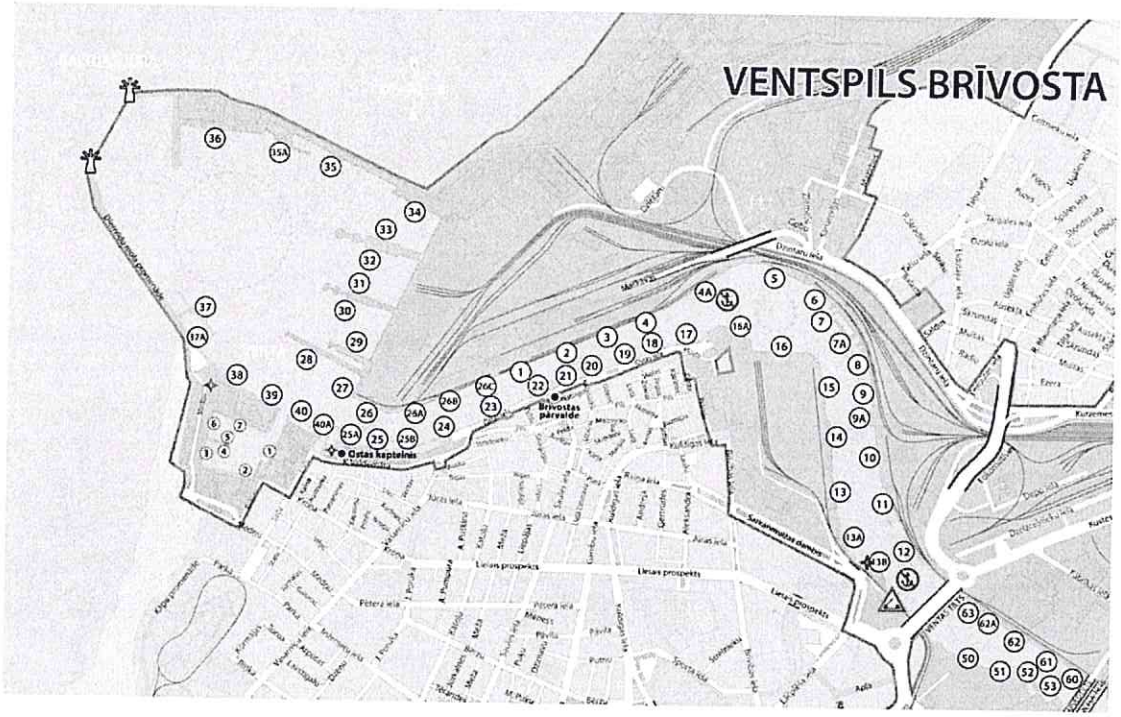

Figure 1. Chart of the Freeport of Ventspils with current and planned VTMS hardware sites.

Red stars mark sites of the current VTMS hardware on the figure – Vessel Traffic Service Management Centre of the Freeport of Ventspils Authority, Kr. Valdemara Street 14, Ventspils and Dienvidu mols 5, Ventspils (Southern RS1). The blue star marks the planned additional site for installation of hardware – on the roof of the Association of Fishermen of Northern Kurzeme in Ventspils, Sarkanmuizas dambis 29b.

23.1. The following hardware is operative in the Vessel Traffic Service Management Centre:

Radar ATLAS 9600 VTS (3 cm, antenna 22 feet, 12 rpm) 1 pc.
Radar ATLAS 8600 (8 feet antenna) 1 pc.
Central processing unit (multitracker) 1 pc.
Workstations of operators (each having a double display) 2 pcs.
VHF radio stations KT-730 2 pcs.
VHF channel recording equipment KT-730 4 pcs.
Uninterruptible power supplies – UPS 2000 4 pcs.
Emergency diesel generator 380 V 18 kW 1 pc.
Radio direction finder (RDF) 1 pc.
The height of the radar mast is 18 metres, the height of the mast of the radio direction finder is 30 metres.

The Vessel Traffic Service Management Centre uses the database of vessels VELKONIS (produced by Latvian company HMS) and AIS – Transas Marine electronic chart programme with internet connection to the Search and Rescue Coordination Centre of the Coast Guard (Riga).

23.2. Hardware of Southern RS1 (address Dienvidu mols 5, Ventspils):
Radar ATLAS 9600 VTS (3 cm, antenna 22 feet, 12 rpm) 1 pc.
Automatic weather station Aanderaa AWS 2700 1 pcs.
Uninterruptible power supply UPS 2000 1 pcs.
Emergency diesel generator 380 V 15 kW 1 pc.
Two-way radiocommunications between the radar tower of the Vessel Traffic Service Management Centre and Southern RS1 is ensured using ERICSON MINILINK 23 E (2 Mbit/s) microwave line.
The height of the radar mast is 20 metres.

23.3. Pilot boats

23.3.1. Pilot boat Kaija.

Radar JRC JMA-2300 (out of order), Global positioning system (GPS).

23.3.2. Pilot boat Ronis.

Radar JRC JMA-2300, Global positioning system (GPS) GPS Navigator S-NAV500, B Class AIS transponder MA-500TR.

23.4. Navigation marks

36 buoys, 17 sea-marks, 17 leading marks and 3 beacons – Užavas, Ovīšu, Akmeņraga – are installed for navigation in the Port of Ventspils and in its proximity. Navigation marks are equipped with an automatic observation system Regional Control Centre E741. This system is not currently integrated into the VTMS and is operating as a separate system.

24. Modernisation of VTMS

24.1. Vessel Traffic Service Management Centre
24.1.1 To replace the radar and the antenna ATLAS 9600 VTS (22 feet antenna);
24.1.2 To replace the radar and the antenna ATLAS 8600 VTS (8 feet antenna);
24.1.3 To replace VHF radio stations KT-730;
24.1.4 To replace UPS (≥5 min);
24.1.5 To replace air conditioning/heating units;
24.1.6 To replace the radio direction finder;
24.1.7 To install an additional AIS device;
24.1.8 To replace VTMS hardware, operator desktops and other equipment, which is necessary for the work of operators;
24.1.9 To install ARPA and electronic chart functions, a static position mode;
24.1.10 Electronic charts of the Port of Ventspils area and the outer roadstead should be purchased and pre-installed;
24.1.11 To replace the target tracking processor;
24.1.12 No replacement of the existing masts and the emergency diesel generator is envisaged;
24.1.13 No reconstruction of the building of the Vessel Traffic Service Management Centre is envisaged;
24.1.14 No connection of VELKONIS vessel database to VTMS is envisaged.

The work performance project should include a sketch of the hardware to be deployed in the Vessel Traffic Service Management Centre, on the radar mast and on the mast of the radio direction finder.

24.2. Southern RS1
24.2.1 To replace the current automatic weather station Aanderaa with sensors;
24.2.2 To replace the radar ATLAS 9600 VTS (22 feet antenna);
24.2.3 To replace the target tracking processor;
24.2.4 To replace the microwave line for communication between the Vessel Traffic Service Management Centre and Southern RS1. Bandwidth of MW lines ≥10Mbit/s;
24.2.5 To replace containers of hardware and the emergency diesel generator. Container and guarding system should be restored in new containers;
24.2.6 Marks and safeguards should be installed in proximity of the hardware for security reasons to prevent any labour safety related accidents during operation of the hardware;
24.2.7 No replacement of the existing mast and the emergency diesel generator is envisaged.

The work performance project should include a sketch of the hardware to be deployed at Southern RS1.

24.3 Association of Fishermen of Northern Kurzeme in Ventspils, Sarkanmuizas dambis 29b.

24.3.1 To deploy a radar envisaging reflection of its signal to the Vessel Traffic Service Management Centre to be able to observe the territory from the turn of the River Venta to the second bridge across the Venta, to integrate a radar into the VTMS;
24.3.2 To install a radio direction finder (RDF) envisaging reflection of its signal to the Vessel Traffic Service Management Centre, to integrate the radio location finder into the VTMS;
24.3.3 The radar and the RDF should be installed on a customised mast, bracket, container or a combination thereof. If the radar and the RDF are installed on a container or containers, a security alarm should be installed. To install an electric power meter, which will record power consumption of the radar and the RDF. Marks and safeguards should be installed in proximity of the hardware for security reasons to prevent any labour safety related accidents during operation of the hardware.

The work performance project should include a sketch of the hardware to be deployed on the roof of the Association of Fishermen of Northern Kurzeme in Ventspils, Sarkanmuizas dambis 29b.

24.4 Pilot boats
24.4.1 To dismantle the old radar from the pilot boat Ronis and to install a new one with at least 12 kW emitted power. To install a portable computer with an electronic chart programme pre-installed. If the current GPS is incompatible with electronic charts, then replace the GPS. If the GPS is compatible, then connect the existing GPS to the electronic chart system. To dismantle the existing AIS hardware and to install a new one.
The AIS Class B transponder should ensure transmission of at least the following vessel data: name, Maritime Mobile Service Identity (MMSI), calling signal, length and width, Course Over Ground (COG), Speed Over Ground (SOG) and Heading.
Technical requirements of the portable computer: vibration-proof hard drive SSD or HDD (HDD guard) ≥250 GB, RAM ≥2 GB, CPU dual core, compatibility with WIN 7, screen ≥15".
The portable computer should have an electronic chart programme pre-installed, which ensures displaying of AIS targets in the area of operation of the AIS.
Electronic charts in the computer should be compatible with the GPS and the AIS hardware of vessels by connecting to the Pilot plug.
Electronic charts of the Port of Ventspils area and the outer roadstead should be purchased and pre-installed.
24.4.2 Pilot boat Kaija.
To dismantle the existing radar and to install a new one with at least 12 kW emitted power. The radar should be compatible with the existing GPS, AIS and electronic charts.

24.5. Navigation marks
To integrate an automatic observation system of navigation marks (buoys, land-based navigation marks, leading marks, beacons) in the Ventspils VTMS system.

25. Radars

25.1. Characteristics of the existing 22 feet radars.
Two 22 feet radars of the current system are installed in such a way to make the outer roadstead and the inner roadstead visible from both of them. The radar of the Southern Breakwater is mainly used to control vessel traffic along channels.
Both radars are X-band (9375 MHz). 25 kW transmitters (2 for each radar).
Transmitters with switchable pulse wavelength – 80, 300, 1000 ηs, with PRF 2.0, 1.0, 0.5 kHz respectively.
Parameters of antennas:
Size – 22 feet, rotation rate – 12 rpm, horizontal beam width - 0.40° at 3dB level, vertical beam width - 15° at 3dB level, antenna gain 35 dB, side lobe level at +/-10° angle - -31.2dB. Polarisation – horizontal.

25.2. Requirements for the new 22 feet radars.
Both offered 22 feet radars should be X-band with dual 25 kW transceivers (parameters no worse than those in p. 28.1), installed in hardware containers, with switchable pulse wavelength (short, medium, long). Pulse waveform – fast rise no worse than 20 ηs, fast fall no worse than 30 ηs. Switching of pulse wavelength should not affect frequency stability. Both radars should be equipped with electronic devices, which effectively reduce sea and rain clutter (STC, FTC). Total noise level of receivers – no worse than 3.5 dB. Dynamic range of receivers – no worse than 120 dB. Transmitters should be equipped with a radiation blanking devise with at least four adjustable sectors. There should be the possibility to prevent radars from affecting each other (Stagger). Hardware containers of both radars should provide the possibility to visually control raw and processed radar video, adjust transmitters, diagnose the hardware and display fault messages.
The Contractor should install a circular polarisation antenna for the radar of the Southern Breakwater and horizontal polarisation antenna for the radar of the VTMS centre (radiating element and a transmission with a motor) with frequency of ≤ 20 rpm, size of the radiating element ≥ 19'. Horizontal beam width ≤ 0.40° at 3dB level, vertical beam width ≤ 15° at 3dB level, first side lobe level at 28 dB, side lobes +/- 10° or more outside the beam of 35 dB. Gain of the radiating element – 35 dB.
A scan converted raw video signal is used for identification and display of targets of the VTMS radar system in Latvia. Radar target reflection characteristics, accuracy and separation correspond to the Advanced level in the requirements of IALA Recommendation V-128. After the modernisation, characteristics of radars and antennas should be at the same level as the minimum.
The Tenderer should include in its tender a programme with the possibilities to record video image from the radar and voice recording from one of the installed and operating systems to a portable USB flash drive. The system version should correspond to the version proposed to the Port of Ventspils.
The scenario should display a video image from 1 (one) radar at a distance of 0.5-1.5 nm from the radar and should demonstrate that the video of the vessel's echo matches the actual length and width (+/- 10%) of the vessel, and the changes in the vessel's heading match actual turns of the vessel.
The Tenderer's offered radar video quality should be no worse than in the current system, which has been used by VTMS operators and vessel pilots for many years to provide navigational aid to vessels.
The delivered radar equipment should correspond to the below mentioned standards and recommendations or their equivalents:

IEEE Std 686-1997- IEEE Standard Radar Definitions;
ITU – ITU-R SM.1541 Unwanted emissions in the out –of –band domain;
ITU – ITU-R SM.329-9 Spurious emissions;
IALA Guideline 1056 – On The Establishment of VTS Radar services.

25.3. Requirements for the new 8 feet radars
A vessel radar with an 8 feet antenna, transmitter pulse output ≤ 10 kW and range up to 48 nm with ARPA and electronic chart functions should be installed in the VY+TMS centre as a backup. The radar should operate in a Static position mode (image orientation towards the North, speed 0, monitoring of anchored ships with a drawn safety circle. The radius of the circle should be adjusted for each target separately. When the target leaves its safety circle, an alarm should sound). The backup radar should be connected to the general data recording system.
The requirements listed in this paragraph also refer to the radar to be installed at Sarkanmuizas dambis 29b.
If according to the contractor's calculations a radar with a shorter antenna can be installed at Sarkanmuizas dambis 29b and it would be appropriate to install it, the Contractor should coordinate this in writing with the Contracting Authority.

25.4. Table of technical parameters of radars.
All tenderers must complete and submit Table 1 – technical parameters of radars in their technical offer.
Any item of this specification is an integral part of these requirements.
Table 1 – Technical parameters of radars.

Parameter	Data	Notes
Radiating element		
Manufacturer		
Size		
Rotation rate		
Gain		
Horizontal beam width at 3dB level		
Vertical beam width at 3dB level		
First side lobe level		
Side lobes +/-10° or more outside the beam		
Radar transmitter		
Manufacturer		
Frequency		
Peak output		
Pulse wavelength		
Pulse waveform – fast rise time/fast fall time		
Pulse repetition frequency		
Blanking		
Stagger		
Radar receiver		
Maximum receiver input signal		

Total noise level		
Dynamic range		
STC		
FTC		
Characteristics of reflected targets		

Accuracy in range		
Accuracy in bearing		
Separation in range		
Separation in azimuth		
Backup radar		
Manufacturer		
Size of the radiating element		
Peak output		
Maximum range		
ARPA		
Electronic chart		
Static mode		

25.5 Radar tracking processors.
Radar tracking processors should ensure tracking of at least 300 true targets by operator's choice – automatically or manually.
To avoid tracking of unnecessary targets (system noise, wave noise, etc.), the processors should use the sweep-to-sweep correlation.
The multi-target tracking processor should ensure tracking of targets from all radars by operator's choice – automatically or manually. To create a qualitative reflection of traffic, radar tracking processors should have the following functions:

1. Unacknowledged, acknowledged and lost targets should de displayed using different symbols (for example, circle, square, etc.)
2. Path, time and track prediction
3. CPA
4. TCPA
5. Anchor watch with operator controlled safety circle for each target
6. Vessel speed vector with operator controlled time.
7. Course, speed and label identity, vessel's name for acknowledged targets
8. Collision alerts
9. Track history with operator controlled time
10. Correlation of targets
11. Target swap
12. Track type change – normal, authorised, dangerous – in different colours.
13. Track condition change – moving, anchored, at berth (symbol and/or colour change).

The target reflection characteristics of X-band radars should correspond to Table 2.

Table 2 – Target reflection characteristics.

Aim	Reflection area	Target height
Aids to navigation without radar reflector, small open boats, fibreglass, wood or rubber with outboard motor and at least 4 metres long, small speedboats, small fishing vessels, small sailing boats, and the like.	1 m^2	1 m ASL
Inshore fishing vessels, sailing boats, speedboats, and the like.	3 m^2	2 m ASL
Aids to navigation with radar reflector.	10 m^2	3 m ASL
Small metal ships, fishing vessels, patrol vessels, and the like.	100 m^2	5 m ASL
Coasters, and the like.	1000 m^2	8 m ASL
Large coasters, bulk carriers, cargo ships, and the like.	10000 m^2	12m ASL
Container carriers, tankers, etc.	100000 m^2	18m ASL

Requirements for accuracy and separation of radar units are summarised in Table 3.

Table 3 – Requirements for accuracy and separation of radar units.

Radar accuracy and physical separation between small point targets for discrimination in display and tracking		Display	Tracking
By range	Short range applications (<5 nm coverage – include waterways, harbours etc)	15 m	25 m
	Long range applications (up to 20 nm coverage – littoral waters etc)	50 m	60 m
	Very long range applications (>20 nm coverage)	80 m	100 m
By azimuth	Angle between targets as seen from the radar	0.55^0	0.6^0
	Or distance in meters, whichever is the greater	15 m	25 m
	Corresponding -3 dB antenna horizontal beam width	$\leq 0.40^0$	

25. Requirements for the Transceiver.
The radar transceiver should have the following functions:

1. The radar system of the transceiver should be intended for automatic operation.
2. The radar transceiver should be installed in a hardware container.
3. High dynamic range and high separation to distinguish both large and small vessels, even when they are close to each other.
4. The transceiver should be equipped with remote control.
5. Several control profiles should be ensured, which are necessary to maintain the parameters of the transceiver that are defined above, which would optimise the performance of radar ranging, according to changeable weather conditions or special operational requirements. Thus, control profiles should provide operators possibilities to adapt the mode of the radar system and processing of receivers in a fast and trustworthy way. Possibility of pre-defined profiles, which would eliminate the risk in case of improper activities of operators or reduce the need for the operator to acquire detailed knowledge about functions and meaning of radio ranging.
6. The programme should ensure complete and comprehensive diagnostic function for the radar transceiver.
7. Use dry air as an active drier for cleaning of waveguides, as it maintains pressure in the waveguide automatically.
8. All radio ranging control functions, including parameter settings, should be available in the VTMS centre.
9. Built-in automatic noise suppression mechanism, which eliminates the need for the operator to adjust sensitivity of the radar during normal operation.
10. The transceiver should have up to four transmitter blanking user-defined sectors. Each sector can be defined bearing 0 to 359 degrees and in sector width from 10 to 350 degrees with a 1 degree increment.
11. The operator display should show information that the sector preparation is on.
12. After alternating current outages all radio ranging settings should remain unchanged and there should be the possibility to enter defined default values.

The above mentioned specifications should be applied to all frequencies, within normal operating range and in temperature conditions prevailing in locations of radars.

25.7. Requirements for antenna mechanisms

25.7.1. The turning unit of the antenna should have a secure design. The configuration of mechanisms should ensure protection against environmental impact for at least 15 years, without distinguishable degeneration or corrosion in metal parts or finishing materials or parts.
Reliability:
The drive block of the antenna should ensure long-term operation for at least 3 years without maintenance or servicing. An overhaul (for example, replacement of bearings,

oil seals in gears) not more frequently than once in 60,000 hours of uninterrupted operation.

25.7.2. Requirements to the antenna turning mechanism.
Wearing parts of the rotation mechanism should be replaced without lifting of the equipment.

If the system needs other connection elements or accessories, which are not mentioned in this specification, the Contractor should cover their costs.

25.8. Conformity of radars to the requirements and integration into the system.
The Contractor shall intensively test and integrate the system to ensure compliance with all the operating requirements. The test should include tests for vessels with known RCS to check sensing ranges from radar.
Standard atmospheric conditions should be assumed in radio ranging simulation calculations.
All the equipment should meet IALA guidelines and recommendations (or equivalent): Operational and Technical Performance Requirements for VTS Systems, V-128, June 2007 (compliance level: advanced), www.iala-aism.org.

25.9. The Contractor should submit a display chart of accuracy and separation about each section of radar ranging.

25.10. The Contractor should submit an integrated coverage chart about all radars together, where related accuracy and separation is displayed.

25.11. All models of radar equipment should be well-tested, successfully used for a long periods of time in other VTMS systems.

26. Automatic identification system (AIS)

26.1. The AIS unit should be installed in the VTMS centre and should be integrated into the entire system. There should be the possibility to use radar or AIS information separately, as well as integrated radar/AIS information.
The AIS unit should correspond to the below mentioned standards and recommendations or their equivalents:

1. IMO MSC.74(69), Annex 3 – IMO Recommendation on performance Standards for a Universal Shipborne Automatic Identification System (AIS);
2. ITU Radio Regulations – Appendix S18, Table of transmitting Frequencies in the VHF Maritime Mobile Band;
3. ITU-R M.1371-1 – ITU Recommendation on the AIS using Time Division Multiple Access in the Maritime Mobile Band;
4. IEC Standard 61993 Part 2 AIS Operational and Performance Requirements, Methods of Testing and required Test Results;
5. IALA Technical Clarification – IALA Technical Clarification of Recommendation ITU-R M.1371-1;
6. IALA Recommendation A-124 – IALA Recommendation on AIS Shore Stations and Networking Aspects Related to AIS Service;
7. IALA Recommendation V-125 – IALA Recommendation on the Integration and Display of AIS and other information at a VTS Centre.

Operators should have the possibility to send short (158–162 symbols) safety-related messages. A message can be addressed to an individual vessel (MMSI number) or all the vessels in the VTMS area.

26.2. AIS operational audio and/or visual alerts should be envisaged for the cases of:

1. Loss of AIS tracking or signal;
2. Contradiction in AIS data;
3. Loss of correlation between AIS and radar data;
4. Other AIS system error.

26.3. A monitor with a connection to the AIS base station should be installed in the room of the harbour master, work room of port supervisors and work room of pilots.

27. Radiocommunications system

27.1. The Contractor should replace existing recoding VHF radio stations in the VTMS centre. It is necessary to install 5 (five) stationary radio systems. 3 (three) in the VTMS centre, 2 (two) in the rooms of port supervisors.

27.2. Requirements for VHF radio stations to be installed.
Table 4 – Requirements for VHF radio stations.

Work modes	Simplex/Semi-duplex, Dual Watch, Scanning of channels
Frequency range	150.8 MHz – 163.6 MHz
Channel bandwidth	25 kHz (12.5 kHz option)
Modulation	Telephony – G3EJN DSC – G2B
Frequency stability	+/- 10 ppm
Temperature range	-15˚ to +55˚C
Supply voltage	13.2 VDC
Transmitter output	25/1 W
Receiver input sensitivity	at 12dB SINAD – 119 dBm
Signal/noise level	better than 40 dB
Low frequency output	4W/4 Ω
Antenna	Omni-directional 50 Ω

27.3. The system server in the operator room of the Vessel Traffic Service Management Centre should register all voice and DCS communications and AIS messages. Authenticated users should have access to all these records. All voice and data messages should be recorded automatically.

27.4. VHF radio stations are used for the following purposes:

1. Traffic information services
2. Aid to navigation services
3. Traffic organisation
4. In case of emergency, services of patrol ships (coordination aid, information about incidents, presenting information about patrol ships, police ships, etc.);
5. Channel blocking management services
6. Aid services observing traffic safety requirements, observing environmental protection requirements.

27.5. The Contractor shall include all materials, installation accessories (antennas, cables, connectors, etc.).
27.6. Image contours should be installed on all websites.

27.7. Equipment.

Each workplace should be equipped with:

1. A handset with microphone, speakers, transmission switch
2. A radio headset with microphone
3. A table microphone
4. A Push to talk Hand Switch.

27.8. Radiocommunications should correspond to the below mentioned standards and recommendations or their equivalents:

1. SOLAS Chapter IV (Radiocommunications);
2. SOLAS Chapter V (Safety of Navigation) Regulations 12,19;
3. Resolution A.694(17) – General Requirements for Shipborne Radio Equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for Electronic Navigational Aids;
4. IEC 721-3-6 – Classification of environmental conditions, Part 3: Classification of groups of environmental parameters and their severities; Ship environment;
5. IEC 60945 – Marine navigation and radiocommunication equipment and systems – General requirements, methods of testing and required test results.

28. Meteorological equipment

28.1. The existing meteorological unit on the radar tower of the Southern Breakwater should be dismantled.

28.2. The Contractor shall deliver and install meteorological equipment on the radar tower of the Southern Breakwater. Meteorological equipment should be integrated into the entire system. Transmission of data to the VTMS centre should be ensured. In the work room of operators of the VTMS centre there should be the possibility to view meteorological data on the monitor and to print them in A4 format. The minimum data interval shall be 10 minutes. The station should supply measurements 24/7.

Minimum requirements to the measurable parameters and accuracy of data of the meteorological equipment to be installed are summarised in Table 5.
Table 5 – Minimum requirements to the measurable parameters and accuracy of data of the meteorological equipment to be installed.

Measurable parameter	Minimum accuracy of data
Wind speed	+/- 1 m/sec.
Wind direction	+/- 10 degrees
Air temperature	+/- 1°C
Air relative humidity	+/- 5%
Air pressure	+/- 2 hPa

28.3. Displaying of data from the automatic weather station on monitors should also be installed in the work room of the pilot service, in the room of port supervisors and the harbour master.

The meteorological hardware to be installed should correspond to the below mentioned standards and recommendations or their equivalents:

1. WMO – International Meteorological Vocabulary, Guide to Meteorological Instruments and Methods of Observation;
2. Code on Alarms and Indicators (and MSC.39(63) Adoption of amendments to the Code on Alarms and Indicators
3. Resolution A.694(17) – General Requirements for Shipborne Radio Equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for Electronic Navigational Aids;
4. IEC 529 Degrees of protection provided by enclosure (IP Code);
5. IEC 721-3-6 Classification of environment conditions;
6. IEC 60945 – Marine navigation and radiocommunication equipment and systems – General requirements, methods of testing and required test results.

29. VHF radio direction finder unit

29.1. The existing antenna of the VHF radio direction finder is installed on a separate 30 metre high tower near the Harbour Master's service. The receiver of the radio direction finder is located in the operator room of the Vessel Traffic Service Management Centre.

29.2. The Contractor should replace the existing radio direction finder and install the second VHF radio direction finder on the roof of the building at Sarkanmuizas dambis 29b, Ventspils.
Both VHF radio direction finders should be integrated into the entire system. Two radio direction finders are required to ensure accurate identification of targets.

29.3. Electronic hardware should be installed in two hardware containers.

29.4. Technical requirements for the VHF radio direction finder are given in Table 6.
Table 6 – Technical requirements for the VHF radio direction finder.

Parameter	Technical requirements
Channels to be scanned	All international marine VHF channels
Selection of channels to be scanned	From the VTMS Centre
Visual display of the bearing line	Automatically on the radar screen during the entire subscriber transmission time
Minimum delay in visual display after signal is received	No more than 3 sec
Accuracy of the bearing line	No worse than +/- 1.0°
Correction of the bearing line	In all directions from the VTMS Centre

30. Equipment of workstations in the VTMS Centre

30.1. The Contractor should equip 2 (two) identical operator workstations in the VTMS centre.
The Contractor should deliver and install tables and chairs for 2 (two) operator workstations, which are prepared and configured according to the usage needs of the VTMS system. Tables should be adapted for installation of the necessary hardware and operator's work. Tables should have adjustable height. Chairs should have adjustable height and backrest angle.

Each workstation should be equipped with 3 (three) 23" monitors, which are compatible with the VTMS system.

To supply the operator work room of the VTMS Centre with:

1. One stationary telephone set: a wireless telephone with caller ID display, phone book (at least 150 numbers), speed dial numbers (at least 9); battery capacity: at least 12h in talking mode, at least 180h in waiting mode; working area indoors at least 50 m; working area outdoors at least 300 m; call volume adjustment.
2. One mobile phone set with a charger;
3. One VHF portable radio station with a charger;
4. One printer: print type – black-and-white, laser; print speed – no less than 16 A4 pages per minute; max paper size: A4; max memory: no less than 128 MB; printing resolution: no less than 1200x1200 dpi; available and usable ports – USB 2.0, 10/100 Mbps Ethernet; equipment – power cable for Latvia, USB cable for connection to the VTMS system;
4. Lamps at workplaces 2 pcs.;
5. Document cabinets with 4 drawers 2 pcs.

30.2. Workstations of technical personnel should be equipped with 1 (one) technical desktop with a connection to the VTMS system, with the possibility to control technical state of the entire system, to analyse fault messages, update and upgrade system software, update and edit electronic charts, etc. Access to the system should be password-protected.

30.3. In the traffic organisation mode any desktop monitor should display:

1. Video of target radar echo;
2. Afterglow of target echo;
3. Target tracking symbols with changeable speed vector;
4. Data windows for selected targets;
5. VHF direction finder's bearing lines, system and operative alert messages.

30.4. Operative menus. There should be the possibility to select different scales (at least 48 NM), pan, zoom.

30.5. Monitors should be able to display transmission from the backup 8 feet radar and the radar on the roof of the Association of Fishermen of Northern Kurzeme in Ventspils, Sarkanmuizas dambis 29b.

30.6. Together with software, the Contractor should deliver and install the following electronic navigational charts from an official distributor of charts from the Catalogue

of Navigational Charts of the Hydrographic Service of the Maritime Administration of Latvia (Electronic Navigational Charts – ENC S-57):
LV 532100 – Port of Ventspils, scale 1:8000; LV 412257 – approaches to the Port of Ventspils, scale 1:22000; LV 331015 – Central part of the Baltic Sea, scale 1:180000.
The indicated electronic charts shall be installed in the system of the VTMS Centre and on pilot boats.
There should be a possibility to update and edit charts.
The software should provide chart editor functions with the possibility to draw points, symbols, lines, polygons, circles, name elements and other editing functions. There should be the possibility to enable/disable any of elements.
Chart editing functions are allowed only by using a password of a system administrator.

31. Table of main functional and performance requirements of the multi-target tracking processor

31.1. This section of the technical specification contains references to the specification [V-128] IALA Recommendations V-128 – Operational and Technical Performance Requirements for VTS Systems, Edition 3.0, June 2007.
31.2. All the tenderers must comply with these requirements. Any section of this specification is an integral part of these requirements. The Tenderer must complete this table and submit it together with its technical offer.
Requirements are given in Table 7.
Table 7 – Functional and performance requirements for the multi-target tracking processor.

No	Requirements	Type[1]	Degree[2]	Compliance of tenderer's equipment[3]	Proof of compliance of tenderer's equipment[4]
1	The multi-target tracking processor should be able to make changes in the position range–bearing measurements of at least two radar transceivers at the same time	F	R		
2	The target tracking processor should be able to prepare AIS position reports (Reports 1, 2, 3 and 9) with target position information and vessel static voyage-related reports (Report 5) with target identification information	F	R		
3	The target tracking processor should be able to calculate at least time, position, course over ground and speed over ground for all targets	F	R		
4	The target tracking processor should be able to calculate rate-of-turn or acceleration	F	D		

1 F – ~~f~~Functional requirements~~,~~
P – ~~p~~Performance requirements
2 R – required~~,~~
D – desirable
O – optional
3 Compliance of tenderer's equipment: F – fully compliant, P – partially complaint, N – non-compliant
4 All the items marked as fully compliant or partially compliant by the tenderer need proof.

	information about targets				
5	The target tracking processor should be able to calculate a potential standard position deviation, course over ground, speed over ground for all targets	F	R		
6	The target tracking processor should be able to uniquely identify all the targets at any given moment.	F	R		
7	The target tracking processor should be able to classify all registered targets as probable target, acknowledged target, acknowledge false target, or lost target	F	R		
8	The target tracking processor should be able to maintain additional identification information at least vessel call signal, MMSI name provided by AIS, manual entry or other source	F	R		
9	The target tracking processor should be able to calculate vessel length, heading based on radar signal. When possible, these calculations should be approved using AIS static information and voyage-related reports	F	R		
10	The target tracking processor should be able to calculate radar bias, i.e. range-bearing deviations, if special sensor configuration or traffic distribution does not allow to get credible data	F	R		
11	The target tracking processor should be able to calculate characteristics of radar operations such as probability of reception or frequency of false alerts	F	D		
12	The target tracking processor should be able to calculate the target movement state – at	F	D		

	unchanged route and/or speed, changes in course and/or speed				
13	The target tracking processor should be able to use advances filtration methods: Multiple-Hypothesis Tracking (MHT), Interacting-Multiple Models (IMM) or Particle Filtering (PF)[5]	F	R		
14	The target tracking processor should be able to automatically identify targets by default	F	R		
15	The target tracking processor should be able to automatically delete targets by default	F	R		
16	The target tracking processor should be able to support automatic track initiation	F	R		
17	The target tracking processor should be able to support track calculation for blank areas of the radar	F	R		
18	The target tracking processor should be able to support radar blanking areas, where radar tracking measurements cannot be used	F	R		
19	The target tracking processor should be able to accurately display targets (without errors) in the cases, when the target is moving very close to the radar, is within a slanting range	F	R		
20	The target tracking processor should be able to track targets which correspond to Classes 1–7 [V-128], Section 2.2	P	R		
21	The target separation and accuracy of the target tracking processor should correspond to "advanced tracking" in [V-128], Section 2.4	P	R		
22	The configuration of the target tracking processor should correspond to "advanced level"	P	R		

	in [V-128], Section 5.3				
23	If a target is visible from both radars and AIS, the position reflection accuracy should be higher than individually from each radar or AIS	P	R		
24	The target tracking processor should be able to process at least three targets in cases, when separation is lost, without deviations for at last 120s	P	R		

1 F – functional requirements
P – performance requirements
2 R – required
D – desirable
O – optional
3 Compliance of tenderer's equipment: F – fully compliant, P – partially complaint, N – non-compliant
4 All the items marked as fully compliant or partially compliant by the Tenderer need proof.

32. Additional technical requirements for the VTMS to be installed

32.1 In offered VTS systems, the possibility to expand them easily at any time should be envisaged by attaching additional:

1. Sensors and radars;
2. Additional operator workstations;
3. Additional external traffic centres;
4. The possibility should be envisaged to receive data from other structures, as well as to transfer data to other structures (coast guard, rescue service).

32.2. Processing of radar data.

Processing of radar data should take place fully automatically, which means without operator's participation. When processing radar data, noise and interferences caused by unfavourable weather conditions should be screened out.

The noise suppression mechanism should automatically adapt to local conditions. For example, if a rainstorm affects part of the radar's operational field, noise suppression should be increased in this area only, without affecting other areas of coverage.

An azimuth-based sector masking should be ensured for processing of radar data.

An area-based video masking should be ensured for processing of radar data.

The engineer should be provided the possibility to define and modify charts, using a graphic editor.

32.3. Radar selection and control.

There should be the possibility to enable any radar on any screen. Remote control functions: on/off, ready, pulse wavelength, gain, tuning, noise suppression and adjustment (FTC and STC), reception of hardware alerts and/or fault signals. These control functions shall be available from any display at each workstation.

32.4. AIS data processing should be ensured.

32.5. Tracking.

The target tracking system should provide sensor process measurements and should produce the so-called system track. This is a wide display of the system object. The system should ensure multisensor tracking, taking individual target measurements (radar points, AIS messages).

32.6. The target tracking processor should ensure:

1. The system should automatically initiate tracking in the indicated regions;
2. The system should save tracking of objects in the selected tracking regions;
3. The system should stop tracking objects, when they leave the tracking region;
4. The system should provide the possibility to initiate tracking of objects; manually in the regions, where automatic tracking of objects has not been initiated or has been delayed.

32.7 The tracking system should be able to perform the following functions:

1. The target tracking processor should be able to use advanced filtration; methods: Multiple-Hypothesis Tracking (MHT), Interacting-Multiple Models (IMM) or Particle Filtering (PF)[6];
2. Target tracking should use different algorithms to trace different targets and activities of the target.

The following features should be available when tracking targets:

1. Advanced processing with identification of targets with different characteristics, for example, manoeuvring;
2. Advanced data processing mechanism for target tracking, when many false measurements are possible;
3. Advanced data processing to initiate tracking in the environment with high density of false points.

32.8. Observation, tracing of buoys.

The tracing mechanism should provide the possibility to track buoys in the radar coverage. The purpose of buoy tracking is to identify and warn about deviation of buoys from their position or their drifting.

On the Traffic display there should be the possibility to remove the buoy tracking display.

The system should allow to maintain buoy positions within the safety radius geographically.

32.9. Target tracking coverage for dead zones (zones with limited radar coverage).

The system should provide tracking functionality in dead zones (zones with limited radar coverage). The system should start calculations:

Automatically as soon as the target leaves the radar coverage area,

Manually, it is started by an operator.

When calculating target tracking in zones with limited radar coverage:

The system should use the last known speed or manually indicated speed,

The system should take into account the planned course, or the last known course,

The operator should have the possibility to adjust speed and course manually.

32.10. Identification.

The system should maintain several plans. This plan list should be visualised on the traffic display.

32.11. AIS plan.

AIS identification data and other significant data about the voyage should be used to fulfil the AIS plan.

The AIS plan should be added to target tracking automatically. There should be the possibility to create such a record, using only AIS data or AIS data combined with radar data.

32.12. MIS plan (management information system).

The MIS plan is usually taken from the MIS system and is transferred to the VTMS, is usually within the define period before any vessel's expected arrival.

The system should recognise plans from other external (other) information systems and should be able to project them to the VTMS. The system should be able to add a MIS plan to the tracking list automatically.

32.13. Local plans.

There should be the possibility to use manual identification, using a local plan to identify a vessel, which is not equipped with AIS, or if the vessel has no MIS. The local plan should be defined.

The system should allow to create local plans in the Traffic display and to attach such plans to the tracked target manually.
The traffic display should ensure manual identification.

32.14. Identification of conflicts.
The system should identify and report the following identification conflicts:

1. Dual MMSI;
2. Two target entries, using the same plan.

32.15. Alert.
The alert function should determine potentially dangerous situations and provide reports to operators and operating personnel. In terms of usefulness and efficiency, it is essential to configure and adapt alarm to local traffic situations.
The system should allow adaptation for the needs of the port, by making changes to configuration files and geographical charts, rather than using software changes.
The system should allow configuration of the following items:
Alert region (region, where the alert functions is active (automatically));
Alert rules such as speed above which a speed alert is issued;
Alert presentation, target tracking colour (target label, designation, audible signals, list of alerts;
Filtering of alerts (who will see and which alerts).

32.16. Alert functions.

32.16.1. Protection lines.
A line should generate an alert, if the centre of the tracked target crosses the protection line.
Protection lines should be direction-sensitive. The system should be able to display protection lines on the chart on the traffic display.

32.16.2. Protection zones.
A zone alert should be generated, if the centre of the tracked target enters an active protection zone. Operators should have the possibility to activate individual protection zones.
The system should be able to visualise protection zones on the chart on the traffic display.

32.16.3. Observation, protection of the tracked target.
Operators should have the possibility to activate or deactivate observation of targets.
A circle should appear on the Traffic display, when observation of a tracked target is active or a target activates it.
The alert is active, while the target is in the observation region.

32.16.4. Buoy watch
The offered system should generate a buoy watch.
In case of alerts, when buoy tracking is drifting outside the indicated region.
The system should be able to display buoys on charts of system buoys or on ENC charts.

32.16.5. Anchor watch
Operators should have the possibility to activate or deactivate anchor watch for the target.
As soon as the target leaves watch zone, an alert circle should be generated around the target.
A circle is generated around the target, when anchor watch is activated. The circle size should correspond to the allowed drift region.
Prohibited anchorage should be envisaged.
An alert is generated, when the target is prohibited to anchor in the anchorage zone.
The criterion, identification of attachment, envisages that the target's speed felt below the set threshold.

32.16.6. A grounding prediction should be envisaged (vessel's striking the ground)
The grounding predictions are based on depth contours and barriers indicated on ENC charts.
Operators can activate ENC-based grounding.
The grounding prediction function requires that draughts from the watched target are known. If draughts are not known, a default value should be accepted.
The operator should have the possibility to define grounding prediction in the regions, where the target is watched automatically based on ENC-based grounding.
The operator should have the possibility to mark individual targets outside the grounding prediction watch region.

32.16.7. The operator should have the possibility to assign a track to the marked target, and then watch this track.

32.16.8. The operator should have the possibility to configure the alert time on any operator's display.
Operators should have the possibility to configure the following settings:

1. Underkeel clearance
2. Standard draught
3. Calculated time
4. Depth contours and barriers
5. Alert contour shape
6. Colour alert contours
7. ENC-based grounding activation territory (chart)

32.16.9. Prediction of potential collisions should be envisaged.
The system should be able to supervise, identify and alert about potential collisions of targets in specific regions.
The alert should be active, while the system defined potential collisions.
The system should be able to visualise potential collision alert territories on the chart on traffic displays.

32.16.10. Route observation watch should be envisaged.
The system should be able to watch whether targets observe the routes assigned to them.
The route observation signal is active while the target is outside the route.
The system should generate an alert, when the tracked target (its centre) navigates in the incorrect side of the segment, which is a part of the traffic distribution scheme.

Operators can activate, deactivate the route observation watch.

32.16.11. Speed watch should be ensured.
An alert is generated, when the target speed drops below the minimum defined speed or exceeds the maximum speed, which is defined for a certain period of time.
The alert should be active, while the target is located in speed watch regions, but the speed exceeds speed restrictions for this region.
The system should be able to visualise speed watch regions on the chart on the traffic display.

32.16.12. Fading out of a target.
The system should generate alerts, if the identified target signal fades out in the watched region.

32.17. Presentation of alerts.
The system should provide alert markers for the target, if the target is located in the alert state. All the alerts should be reflected in the list of alerts.
When an alert is selected from the list of alerts, the system shall expand a symbol around the target to mark the selected target.
When an alert is selected, which is outside the current view on the operator's display, the system shall automatically disable pan and zoom function for the camera, to display the tracked target.

32.18. Processing of alerts.
Only those alerts should be displayed, which are related to the territory of the alert
The system should allow to configure what types of signals need operator's acknowledgement.
After acknowledgement the alert should remain on the list, while the state of the alert is active.
An unacknowledged alert shall remain on the list of alerts, even if the alert state has been resolved.
Acknowledged alerts shall remain on the list of alerts, while the state of the alert is active.
An alert should be removed from the list of alerts, while the state of the alert has been suspended.
The list of alerts disappears as soon as all the alerts are acknowledged and there are no active alerts.
It is impossible to close the list of alerts while there are active alerts.
Operators should have the possibility to activate or deactivate the alert function for each alert type manually.
Operators should receive alerts, which come from the region having the selected status.

32.19. Routing.
The system should allow to assign records to routes to ensure effective management
When a record has been selected, and a route has been assigned to it, the system should indicate the assigned route.
The rote should allow for crossing of other routes.

The system should calculate the estimated time of arrival, list of stops along the route, based on the current course and speed.
The system should send the actual time of arrival to the MIS management system, when the target crosses the stop.

32.20. Exchange with traffic data.
Many traffic monitoring organisations today are interested or obliged to cooperate with other business entities and exchange traffic images with it. Even closer cooperation between different business entities is intended in the future.
Therefore, the proposed system should allow to import data about targets from other systems in the following formats:
• ITU 1371 (AIS)
• IVEF (IALA's XML Inter-VTS Exchange Format)
The system should allow to export data to other systems in the following formats:
• ITU 1371 (AIS)
• IVEF (IALA's XML Inter-VTS Exchange Format)

32.21. Traffic display.
On the traffic display the system should provide a real-time overview of the actual traffic condition.
32.21.1. Display image components.
The proposed system should have the possibility to display the following components on the Display: Main traffic window, Additional traffic window, Meteo window Events window.
32.21.2. Display and selection of meteorological data.
The Contractor should ensure displaying of data from the automatic weather station. The possibility should be envisaged to select all the available data by time periods: 10 min, 1 hour, 1 day, as well as to display maximum, minimum and average values of data in these time periods, including also in the graphic chart.
There should be the possibility to print out data about any of the above mentioned time periods.
Displaying of data from the automatic weather station on monitors should also be installed in the work room of the pilot service and the harbour master.

32.22. Display layers.

32.22.1. Charts. ENC charts. On the traffic display there should be the possibility to process the ENC charts, which are based on S63/S57 data formats. On the traffic display there should be the possibility to display and modify polygon-based and line-based geographic charts.

32.23 Radar video.
Radar video should be displayed at several levels, as a function of physical echo intensity.
32.23.1. The traffic display should allow for manual radar selection.
32.23.2. The traffic display should provide the possibility to use mosaics to define regions, which display radar video from specific radio sensors.

32.23.3. Mosaics on the Traffic Display should automatically switch to an alternative mosaic, if a radar sensor fails. An alternative mosaic should cover as large regions as possible from the coverage of the damaged radar.
32.23.4. The traffic display should provide the possibility to display radar video from each sensor separately at the same time using an automatic mosaic.

32.24. The traffic display should provide operator the possibility to adapt the following radar video presentation aspects to its work specifics:

1. Brightness (strength of radar video)
2. Contrast (degree of detail in the radar video)
3. Gain (display threshold, low gain, displays only the strongest radar video, low video signal is suppressed)
4. The Traffic Display should be able to display (synthetic) afterglow.
5. Operators should have the possibility to choose the duration of afterglow (0–50 scans)
6. Afterglow colours

32.24.1. Route display.
The traffic display should display system targets. The position of system targets should be updated at least once in three seconds.
32.24.2. Records of system targets should have at least the following components: target symbol, target label, speed vectors.
32.24.3. Target symbols should contain at least the following parameters: the target symbol depends on the vessel category (configurable maintenance level, it also includes buoys), there should be the possibility to track identity (unidentified/identified), source of identity (AIS, MIS, local), the size of the target symbol is proportionate to the size of the tracked target, with the set minimum size (if remote), the system should use different target symbols, which correspond to different categories, the operator should have the possibility to display or not to display target symbols by categories or by individual goals.
32.24.4. The target label should have at least the following parameters: Labels can freely move around the entry, several label templates should be available. The content of the label, each sticker, should be easily configured without software modifications, which can be made by the maintenance engineer. Labels can include any entry or plan or related field. A label can be a free text, which is specific for the Ventspils VTS centre. Editable fields should allow to edit a label.
32.25. The traffic display should be able to display speed vectors for one target or a group of targets. The speed vector indicates positions for the target by choice, forward, using the current speed and course.
32.25.1. The traffic display should be able to display history points for one target or a group of targets. History points indicate the previous state of the target.
32.25.2. The traffic display should ensure labelling for a target requiring additional attention.
32.25.3. The traffic display should show the route to which the target was added (if applicable).
32.25.4. On the display within the range of 0.5, 1, 1.5 miles on the screen in the outport in parallel, starting from the leading line, there should be lines with 50 m distance from 50 to 400 m with respective marks.

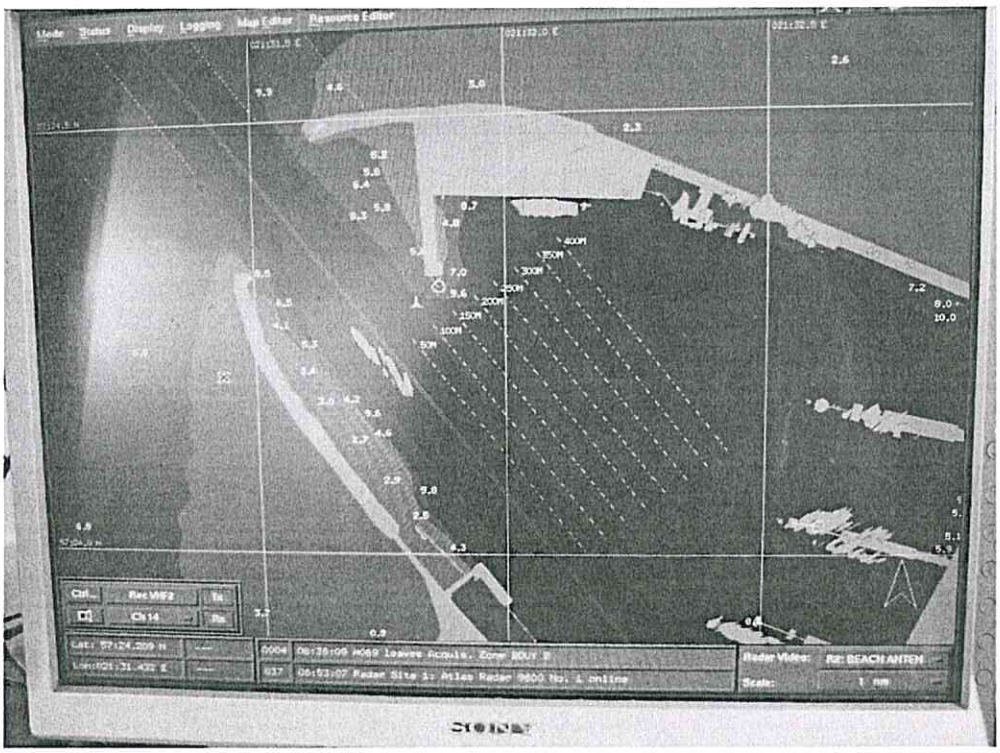

Figure 2. Display of the 50 metres line distance on the monitor.

32.25.5. On the display within the range of 0.5, 1, 1.5 miles, starting from the crossing of leading lined towards the port side, should be marked with points with a distance of 1 cable at a length of 5 cables.

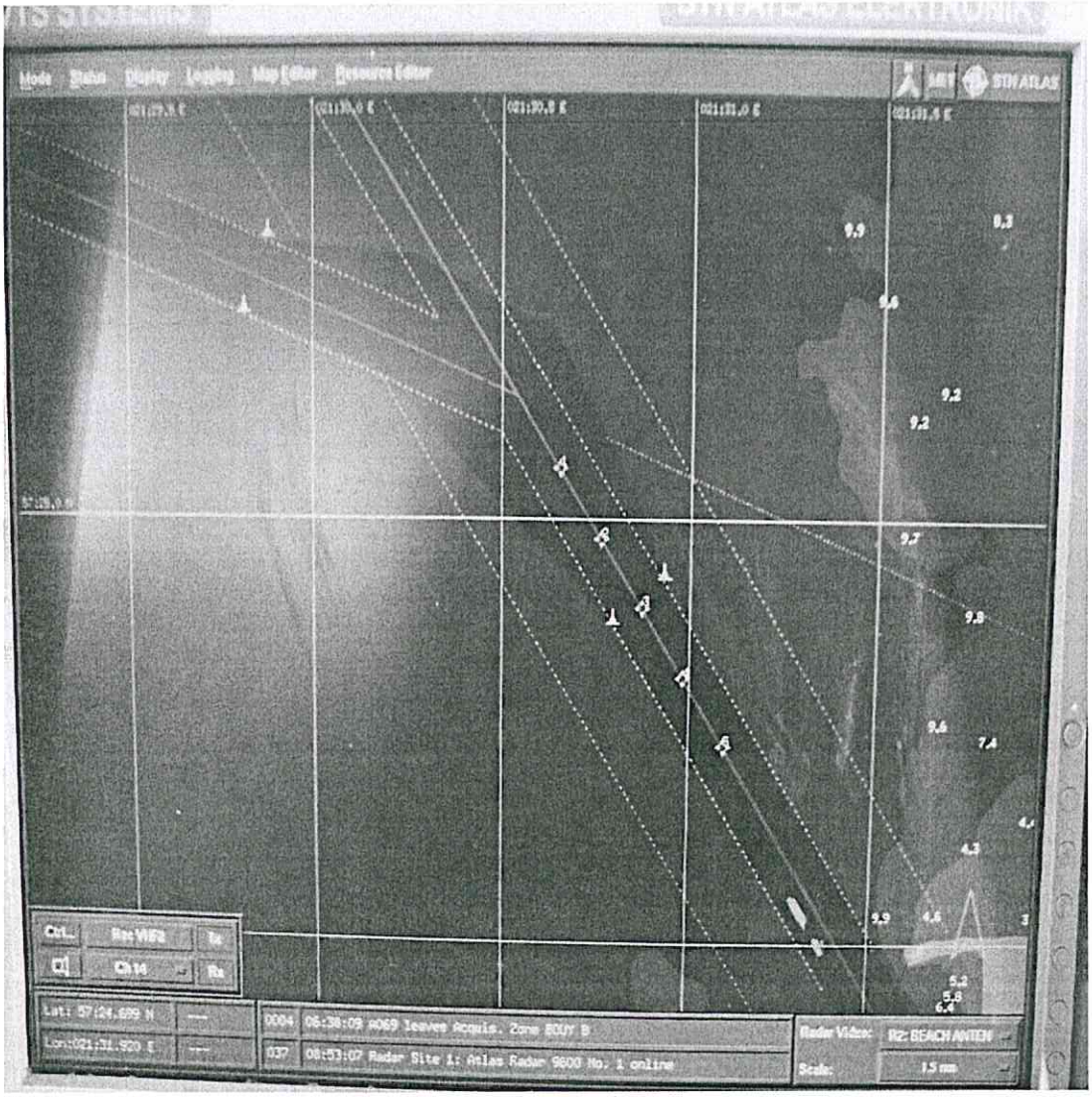
Figure 3. Display of the leading line on the monitor.

32.26. The system should provide visualisation of the bearing lines of the RDF scan. After the VHF transmission, bearing lines of scans should be visible for a certain time (which can be configured by a maintenance engineer without software modifications).
32.26.1. Control of radio direction finder.
32.26.2. Each workstation should display bearing lines from the existing and the newly installed direction finders on any monitor.

32.27. Additional system tools.
32.27.1. Measurements.
32.27.1.1. The system should provide a list of names of standard geographic positions, which the operator can choose as a starting point for measurements.
32.27.1.2. The system shall provide a bearing/distance line between the two targets, between the target and the position or between two places on the traffic display.
32.27.1.3. The bearing/distance line should be updated when each target is updated, unless one or both destinations are related to the target.
32.27.1.4. The label on the bearing/distance lines should state: angle in degrees, the mutual angle in degrees, distance between positions (in metres and nautical miles).

32.27.2. Closest point of approach (CPA) and time to closest point of approach (TCPA).
32.27.2.1. The system should be able to calculate and display CPA and TCPA between two targets or between the fixed point and the target.
32.27.3. Geographic position.
32.27.3.1. The system should provide a geographic position tool, with which operators (with a cursor) can mark a position on the Traffic Display.
32.27.3.2. It can be connected to a geographic location marker and the target. This market follows each time, when an entry should be updated to reflect the target state.
32.27.3.3. The system should be equipped with a position search tool. The position search tool shall allow the operator to find a geographic location by manually entering geographic coordinates (width and length). The marked position shall be marked with coordinates (width and length).
32.27.4. Target tracking.
On the traffic display there should be the possibility to track a target, to display it in a separate (special) window, which can be oriented north-up or heading-up.
32.27.5. Route planning.
The system should allow to define several routes consisting of: segments, zero or several stops and interrelated, the segment should have a middle line and boundaries at both sides, each segment should have the start and end width, a segment can be unidirectional or bidirectional.
32.27.6. Screenshots/film records.
32.27.6.1. The traffic display should provide operators a function to make a photo of full screen, of the selected window or of a specific region.
32.27.6.2. The traffic display should provide operators a function to make a film record of full screen, of the selected window or of a specific region. Films should be stored in the following format: for example, AVI or MPEG.
32.27.7. Display configuration.
Operators should have the possibility to optimize all the locations according to their needs, currently and in the future.
32. 27.8. Access levels, user definition.
32.27.8.1. The system should provide for registration of users (operators) and definition of their functions, it should be provided to each operator and each workstation.
32.27.8.2. The system should have the possibility to register manually and automatically.
32.27.8.3. A username and a password is required for manual registration in the system.
32.27.8.4. The system display should provide for at least the following user profiles:

1. Monitoring, the control profile provides possibilities for operation activities.
2. Maintenance, the engineer profile should provide system administration activities.
3. Playback, can demonstrate recorded data.

32.27. 9. Editors.
The system display should ensure at least the following editors: label editor, colour editor, chart editor.

32. 28. Data entry, archiving and playback.
The VTMS system should record data automatically.

32. 28.1. The Contractor should be provided the possibility to playback any scenario for the previous 30 days, as well as saving of scenarios on CDs, DVDs or external disks, for their playback on any computer.
All work modes should be available:

1. VHF radiocommunications on 09, 14, 16, 67 channels from VHF recording radio stations
2. VHF working radio station channels of the VTMS centre
3. Telephone line
4. Raw and synthetic image from all radars
5. AIS, meteo
6. VHF radio direction finder
7. Other data, including system status information

The radar video image should be synchronised in time with voice recording.

32. 28.2. During playback, the following functions should be provided: start, stop, forward, rewind, back, fast forward and pause.
32. 28.3. If playback takes place on an operator's workstation or on a technical personnel's workstation, normal display functions are kept such as range changes, centre offset, bearing and distance measurement, gain adjustment, noise level adjustment, etc.
32.28.4. Real time recording is not suspended during playback.
32.28.5. The system should have the possibility to store system data for 30 days. The system should be able to reconstruct any specific traffic display (which the operator has seen at that time) data. Such as radar video; targets; attraction size; charts; dialogue windows, which were open; as well as they should be synchronised with VHF channels, and telephone lines and video records from cameras.

32.29.1. Archiving
Radar Sensors, targets, activities of operators, VHF, RDF.
The system should be able to record and playback the following information:

1. Digital Radar video
2. System tracking
3. RDF scanning data
4. Label and identification list data
5. Alerts
6. System operation status
7. Operator display settings
8. VHF voice recording

32.29.2. Playback
32.29.2.1. The operator should be able to call up demonstrations. The playback dialogue shall allow the user to set the start date and time.
32.29.2.2. When a record is demonstrated, the operator should be able to choose playback speed and direction (forward, fast rewind, choose radar channels, voice record channels).
32.29.2.3. There should be the possibility to print from the screen, during demonstration.
There should be the possibility to record the film played of the screen, which should be able to play back on a conventional player.

32.29.2.4. The system should be able to demonstrate, from memory, operator's activity results, for example, zoom, sensor selection, etc. This ability should be present for each workstation separately.
32.29.2.5. When synchronising VHF voice and VTS data, the maximum difference in time cannot exceed 1 second.

Annex No. 4
to the Regulations of the open tender "Modernisation of the VESSEL TRAFFIC MANAGEMENT SYSTEM OF THE FREEPORT of Ventspils"
Procurement identification No. VBOP 2015/198 CEF

List of subcontractors

No.	Subcontractor's name, registration No., registered address, contact person's name and surname, phone number	Short description of works to be transferred to the subcontractor	Scope of works to be transferred to the subcontractor in EUR (excluding VAT)	Scope of works to be transferred to the subcontractor %
1	*2*	*3*	*4*	*5*

Prepared by _____ (name, surname, position)

____ _____ 201__
to Freeport of Ventspils Authority
Jana Street 19
Ventspils, LV-3601

Subcontractor's certification

We hereby <*subcontractor's name, registration No., registered address*> certify that we are informed that <*Tenderer's name, registration No., registered address*> will submit a tender to the Freeport of Ventspils Authority, taxpayer registration No.90000284085, registered address Jana Street 19, Ventspils, for the organised open procurement procedure "MODERNISATION OF THE VESSEL TRAFFIC MANAGEMENT SYSTEM OF THE FREEPORT OF VENTSPILS", procurement identification No. VBOP 2015/ 198 CEF, and in case the procurement contract is concluded with the Tenderer we undertake:

- to perform the following deliveries and to provide the following services: <*short description of the deliveries and the services in accordance with the indicated list of deliveries and services to be transferred to subcontractors*>;
- to transfer the following resources to the Tenderer: <*short description of resources, workforce, technical and financial resources to be transferred to the Tenderer*>.

_____

signature, name, surname, status of the person with representation rights

Annex No. 5
to the regulations of the open tender "MODERNISATION OF THE VESSEL TRAFFIC MANAGEMENT SYSTEM OF THE FREEPORT OF VENTSPILS",
Procurement identification No. VBOP 2015/198CEF

COST ESTIMATE OF WORKS

Procurement identification No. VBOP 2015/ 198 CEF

Site name: "Modernisation of VTMS of the Freeport of Ventspils"

No.	Name of works	Measurement unit	Quantity	Unit costs (euro)	Together with the entire scope (euro)
1	*2*	*3*	*4*	*5*	*6*
1	**Preparation works**				
1.1	Site inspection	pc.	1.00		
1.2	Project development	set	1.00		
1.3	Project coordination	set	1.00		
1.4	FAT (Factory acceptance test) costs				
2	**Dismantling works**				
2.1	Mobilisation of technical units at the site	set	1.00		
2.2	Equipment and hardware to be dismantled				
2.2.1	Radar at the Southern Breakwater, in a hardware container	pc.	1.00		
2.2.2	Radar in the Vessel Traffic Service Management Centre	pc.	2.00		
2.2.3	Automatic weather station at the Southern Breakwater	pc.	1.00		
2.2.4	Radar in the Vessel Traffic Service Management Centre	pc.	1.00		
2.2.5	VHF radio station in the Vessel Traffic Service Management Centre	pc.	5.00		
2.2.6	Microwave line at the Southern Breakwater	pc.	1.00		
2.2.7	Containers at the Southern Breakwater	pc.	2.00		
2.2.8	Diesel generator at the Southern Breakwater	pc.	1.00		
2.2.9	Radar on pilot boat	pc.	2.00		
2.2.10	Tables, control blocks, etc.	set	1.00		
2.3	Demobilisation of technical units from the site	set	1.00		
2.4	Disposal of the equipment and hardware to be dismantled	set	2.00		
3	**Delivery / installation of hardware**				
3.1.	**VTMS Centre:**				
3.1.1	Radar with antenna 8"	pc.	2.00		
3.1.2	Radar with antenna 22"	pc.	1.00		
3.1.3	VHF r/station	pc.	5.00		
3.1.4	UPS unit (depending on the technical solution)				
3.1.5	Air conditioning unit (depending on the technical solution)				
3.1.6	Radio direction finder	pc.	1.00		
3.1.7	Automatic identification system	pc.	1.00		
3.1.8	Microwave line	pc.	1.00		
3.1.9	Radar monitor	pc.	6.00		
3.1.10	Computer monitor	pc.	4.00		
3.1.11	Stationary telephone set	pc.	1.00		
3.1.12	Mobile telephone set	pc.	1.00		
3.1.13	Portable radio station	pc.	1.00		
3.1.14	Stationary radio station	pc.	3.00		
3.1.15	Printer	pc.	1.00		
3.1.16	Workstation lighting	pc.	2.00		
3.1.17	Document cabinet with 4 drawers	pc.	2.00		
3.1.18	Office chair with a backrest	pc.	3.00		
3.1.19	Table	pc.	2.00		
3.1.20	Electronic charts	set	0.00		
3.1.21	Construction of power supply	set	1.00		
3.2.	**Southern tower RS1:**				
3.2.1	Radar with antenna 22"	pc.	1.00		
3.2.2	Air conditioning unit (depending on the technical solution)	pc.	1.00		
3.2.3	Automatic weather station	pc.	1.00		
3.2.4	Microwave line	pc.	1.00		

No.	Name of works	Measurement unit	Quantity	Unit costs (euro)	Together with the entire scope (euro)
1	*2*	*3*	*4*	*5*	*6*
3.2.5	Containers for installation of hardware	pc.	2.00		
3.2.6	Guarding system / Alarm system (to dismantle the existing and to install the existing)	pc.	1.00		
3.2.7	Diesel generator (to install the existing)	pc.	1.00		
3.3.	**Pilot boats**				
3.3.1	AIS Class-B hardware on pilot boats	pc.	1.00		
3.3.2	Portable computer on pilot boats	pc.	2.00		
3.3.3	GPS replacement on pilot boat Ronis	pc.	1.00		
3.3.4	Radar	pc.	2.00		
3.3.5	Electronic charts to pilot boat Ronis	set	1.00		
3.4.	**Sarkanmuizas dambis 29 b (Association of Fishermen of**				
3.4.1	Radar	pc.	1.00		
3.4.2	Mast or container for radar (depending on the technical solution)	pc.	1.00		
3.4.3	Installation of a radio direction finder on the mast	pc.	1.00		
3.4.4	Mast or container for radio direction finder (depending on the	pc.	1.00		
3.4.5.	Construction of power supply (depending on the technical	set	1.00		
3.5.	**Navigation marks**				
3.5.1	Software	pc.	1.00		
4	**Training of employees**				
4.1	Translation services	set			
4.2.	Teacher services	set			
5	**System acceptance / delivery costs**				
5.1	ITAT, SAT	set			
	Total				
	Overhead costs (____%)				
	Profit (____%)				
	Grand total				

Prepared by _____

(signature and print name, date)

4/10