



**THE CITY OF WINNIPEG**

# **REQUEST FOR INFORMATION**

**RFI NO. 451-2013**

**REQUEST FOR INFORMATION FOR THE PROJECT 25 LAND MOBILE RADIO  
SYSTEM**

**ONLY RESPONDENTS THAT RESPOND TO THIS REQUEST FOR  
INFORMATION WILL BE INVITED TO SUBMIT A RESPONSE TO THE  
REQUEST FOR PROPOSAL THAT MAY FOLLOW.**

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## PART B - REQUEST FOR INFORMATION

### B1. DEFINITIONS

B1.1 When used in this Request for Information:

- (a) "**Business Day**" means any Calendar Day, other than a Saturday, Sunday, or a Statutory or Civic Holiday;
- (b) "**Calendar Day**" means the period from one midnight to the following midnight;
- (c) "**City**" means the City of Winnipeg as continued under The City of Winnipeg Charter, Statutes of Manitoba 2002, c. 39, and any subsequent amendments thereto;
- (d) "**City Council**" means the Council of the City of Winnipeg;
- (e) "**Contractor**" means the person undertaking the performance of the work under the terms of the Contract;
- (f) "**may**" indicates an allowable action or feature which will not be evaluated;
- (g) "**must**" or "**shall**" indicates a mandatory requirement which will be evaluated on a pass/fail basis;
- (h) "**Person**" means an individual, firm, partnership, association or corporation, or any combination thereof, and includes heirs, administrators, executors or legal representatives of a person;
- (i) "**Respondent**" means any Person or consortium submitting an Information Submission in response to this Request for Information;
- (j) "**should**" indicates a desirable action or feature which will be evaluated on a relative scale;
- (k) "**Site**" means the lands and other places on, under, in or through which the work is to be performed;
- (l) "**Submission or Information Submission**" means that portion of the Request for Information which must be completed or provided and submitted by the Submission Deadline;
- (m) "**Submission Deadline**" means the time and date for final receipt of Submissions;
- (n) "**Work**" or "**Works**" means the carrying out and the doing of all things, whether of a temporary or permanent nature, that are to be done pursuant to the Contract and, without limiting the generality of the foregoing, includes the furnishing of all Plant, Material, labour and services necessary for or incidental to the fulfilment of the requirements of the Contract, including all Changes in Work which may be ordered as herein provided.

### B2. BACKGROUND

- B2.1 The City of Winnipeg Police Service (WPS) and Winnipeg Fire Paramedic Service (WFPS) currently use a Motorola Project 16 analog/digital trunked radio system.
- B2.2 This system is owned and operated by a local telephone carrier. This radio system is made available to commercial, Government and public safety users throughout the province. This system is a 3 zone Motorola SmartZone™ v4.1 system with approximately 140 sites throughout the province of Manitoba.
- B2.3 The City of Winnipeg utilizes three dedicated multicast Sites, each with ten (10) radio channels in the 821/866 MHz band. These Sites are part of one zone of the province wide system. These thirty (30) frequency pairs are complimented by five (5) simplex channels and three (3) conventional repeaters pairs that are used for mobile repeater applications.

- B2.4 The three City of Winnipeg Radio Sites are described as follows:
- (a) North Tower  
Latitude: 49-57-11.73 N Longitude: 97-06-54.95  
Tower Model: LeBlanc & Royle LRM33 Series Guy Mast  
Tower Height: 126 meters or 413.38 feet
  - (b) South Tower  
Latitude: 49-49-14.2 N Longitude: 97-10-57.4 W  
Tower Model: LeBlanc & Royle LRM33 Series Guy Mast  
Tower Height: 105.7 meters or 346.78 feet
  - (c) Central Tower  
Latitude: 49-53-35.0 N Longitude: 97-8-33.0 W  
Tower Model: LeBlanc & Royle LR20  
Height 30 meters or 98.42 feet. Tower base is 95m above ground level
- B2.5 The North Tower Site is scheduled for decommissioning in 2015. An alternate location or locations will be likely be required to meet the in-building coverage targets.
- B2.6 Coverage from the three (3) Winnipeg Sites has shown a low probability of in-building coverage in the extreme west and east areas of the City. The City wishes to improve coverage in these areas.
- B2.7 The current province wide radio system is utilized by the majority of provincial and federal government departments, provincial emergency medical systems and fire first responder agencies, policing agencies, municipal governments in addition to a significant commercial subscriber population. The City of Winnipeg relies on interagency communication with several groups; notably the
- (a) RCMP;
  - (b) CN rail;
  - (c) CP rail;
  - (d) Canadian Science Centre for Human and Animal Health;
  - (e) Winnipeg Airport Authority;
  - (f) Department of National Defense;
  - (g) Office of Fire Commissionaire;
  - (h) Manitoba Health.
- B2.7.1 In addition to these groups, The City of Winnipeg has access to the interagency talkgroups available to all first responders and government agencies through the province.
- B2.8 The City of Winnipeg wishes to maintain interoperability capabilities with the above referenced agencies.
- B2.9 The City of Winnipeg recognizes that the province wide radio system is approaching it's end of life and an alternative communication system for the current subscribers will be required. As a major stakeholder, the Province of Manitoba has begun an investigation into a replacement system with an anticipated transition target date of 2016.
- B2.10 The City of Winnipeg is contemplating the following three (3) solutions to their communications systems needs and the province wide communication requirements. Additional solutions will be considered.

- (a) a city owned and maintained communication system with roaming capabilities onto the new provincial system;
- (b) a managed communication system that provides City wide and province wide communications;
- (c) a collaborative system that may have the City of Winnipeg provide infrastructure and maintenance within the City of Winnipeg joined to a provincial wide system at a network level, effectively creating one singular network.

B2.11 The City of Winnipeg's contract for radio services expires December 31 2014. Contract extensions are a possibility.

B2.12 The City of Winnipeg Communications Branch (Branch) has a technical staff of two (2) engineers, twelve (12) technologists and five (5) installers and is well equipped and trained in land mobile radio, microwave communications systems and data networks. This group is experienced in system design, installation, commissioning, maintenance and repair of LMR and microwave communication systems. This Branch also provides bench-top board level repair of mobile and portable radio equipment.

B2.13 Currently the City of Winnipeg utilizes approximately 1500 mobile and portable radios, and 22 dispatch consoles on the province wide radio system. The City also operates a second trunked radio network for the public service departments. Approximately 1500 mobile and portable radios are on this MPT1327 trunked radio system. The City would consider moving the MPT1327 network radios to the future P25 radio system provided economical subscriber equipment is available.

### **B3. PURPOSE OF THE REQUEST FOR INFORMATION DOCUMENT**

B3.1 The purpose of this Request for Information (RFI) is to identify information pertaining to a Project 25 Land Mobile Radio System for the City of Winnipeg before a formal bid is tendered.

B3.2 The City invites qualified individuals to submit an Information Submission in response to this RFI.

B3.3 After receiving the Submissions to this RFI, the City will review all Submissions received and use the information to make an informed decision to proceed to Request for Qualifications and/or Request for Proposals, and further in the development of specifications.

### **B4. SCHEDULE**

B4.1 The City intends to:

- (a) review the Information Submissions by September 1, 2013 and
- (b) determine how they plan to proceed by December 31, 2013.

### **B5. ENQUIRIES**

B5.1 All enquiries shall be directed to the City Contact identified in B6.1.

B5.2 Any Respondent who has questions as to the meaning or intent of any part of this document or who believes this document contains any error, inconsistency or omission should make an enquiry prior to the Submission Deadline requesting clarification, interpretation or explanation in writing to the City Contact.

B5.3 If the Respondent finds errors, discrepancies or omissions in the document, or is unsure of the meaning or intent of any provision therein, the Respondent shall promptly notify the City Contact

of the error, discrepancy or omission at least five (5) Business Days prior to the Submission Deadline.

- B5.4 If the Respondent is unsure of the meaning or intent of any provision therein, the Respondent should request clarification as to the meaning or intent prior to the Submission Deadline.
- B5.5 Responses to enquiries which, in the sole judgment of the City Contact, require a correction to or a clarification of the RFI will be provided by the City Contact to all Respondents by issuing an addendum.
- B5.6 Responses to enquiries which, in the sole judgment of the City Contact, do not require a correction to or a clarification of the RFI will be provided by the City Contact only to the Respondent who made the enquiry.
- B5.7 The Respondent shall not be entitled to rely on any response or interpretation received pursuant to B5 unless that response or interpretation is provided by the City Contact in writing.

## **B6. CITY CONTACT**

- B6.1 The City Contact is:  
Ed Richardson P.Eng.  
Communications Systems Engineer  
421 Osborne Street  
Winnipeg, MB R3L 2A2  
Telephone No. 204.986.6002  
Facsimile No. 204.986.2666

## **B7. ADDENDA**

- B7.1 The City Contact may, at any time prior to the Submission Deadline, issue addenda correcting errors, discrepancies or omissions in the RFI, or clarifying the meaning or intent of any provision therein.
- B7.2 The City Contact will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.
- B7.2.1 The Addenda will be available on the Bid Opportunities page at the Materials Management Division's website at <http://www.winnipeg.ca/matmgt/bidopp.asp>
- B7.2.2 The Respondent is responsible for ensuring that he has received all addenda and is advised to check the Materials Management Division's website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.
- B7.3 The Respondent should acknowledge receipt of each addendum on Form A: Request for Information Application.

## **B8. CONFIDENTIALITY AND PRIVACY**

- B8.1 Information provided to a Respondent by the City or acquired by a Respondent by way of further enquiries or through investigation is confidential. Such information shall not be used or disclosed in any way without the prior written authorization of the City. The Respondent shall not make any statement of fact or opinion regarding any aspect of the RFI and any subsequent proposal to the media or any member of the public without the prior written authorization of the City.

- B8.2 The protection of personal information and privacy will be fundamental aspects of the Project. Respondents shall comply with all applicable privacy legislation, including but not limited to the Personal Information Protection and Electronic Documents Act (Canada) ("PIPEDA"). In addition, Respondents are advised that the City is subject to The Freedom of Information and Protection of Privacy Act (Manitoba) ("FIPPA") and that the Contractor will be expected to comply with the obligations imposed upon the City pursuant to FIPPA.
- B8.3 To the extent permitted, the City shall treat all Submissions as confidential. However, the Respondent is advised that any information contained in any Submission may be released if required by City policy or procedures, by FIPPA, by other authorities having jurisdiction, or by law.
- B8.4 All Information Submissions submitted to the City will be kept in confidence with the City for the sole purposes of evaluating and developing the best possible strategic option for the City. Information Submissions will become the property of the City. The City will have the right to make copies of all Submissions for its internal review process and to provide such copies to its staff and/or external advisors and representatives.
- B8.5 All information will become and remain the property of the City; none will be returned. If the application contains any proprietary or trade secret information, said information must be indicated as such.

**B9. NON-DISCLOSURE**

- B9.1 Respondents must not disclose any details pertaining to their RFI and the selection process in whole or in part to anyone not specifically involved in their Submission, without the prior written approval of the City. Respondents shall not issue a news release or other public announcement pertaining to details of their Information Submission or the selection process without the prior written approval of the City.
- B9.2 Respondents are advised that an attempt on the part of any Respondent or any of its employees, agents, contractors or representatives to contact any members of City Council or their staff or any member of City Administration other than the City Contact with respect to this RFI solicitation, may lead to disqualification.

**B10. RESPONDENT'S COSTS AND EXPENSES**

- B10.1 Respondents are solely responsible for their own costs and expenses in preparing and submitting an Information Submission and participating in the RFI, including the provision of any additional information or attendance at meetings.

**B11. NO CONTRACT**

- B11.1 By submitting an Information Submission and participating in the process as outlined in this document, Respondents expressly agree that no contract of any kind is formed under, or arises from this RFI, and that no legal obligations will arise. The City will have no obligation to enter into negotiations or a Contract with a Respondent, even though one or all of the Respondents are determined to be responsible and qualified, and the Submissions are determined to be responsive.
- B11.2 Without limiting the generality of the foregoing, the City reserves the right and the full power to amend or cancel this RFI at any time.

## **SUBMISSION INSTRUCTIONS**

### **B12. SUBMISSION DEADLINE**

- B12.1 The Submission Deadline is 4:00 p.m. Winnipeg time, July 5, 2013.
- B12.2 The City Contact or the Manager of Materials may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B12.1.
- B12.3 Information Submissions will not be opened publicly.
- B12.4 The Information Submission should be submitted enclosed and sealed in an envelope clearly marked with the RFI number and the Respondent's name and address.
- B12.5 Information Submissions submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.
- B12.6 Information Submissions shall be submitted to:

The City of Winnipeg  
Corporate Finance Department  
Materials Management Division  
185 King Street, Main Floor  
Winnipeg MB R3B 1J1

### **B13. INFORMATION SUBMISSION**

- B13.1 The Information Submission should consist of the following components:
- (a) Form A: Request for Information Application (Section A);
  - (b) Product Specifications, Features and Technical Details (Section B).
- B13.2 All requirements of the RFI should be fully completed or provided, and submitted by the Respondent no later than the Submission Deadline, with all required entries made clearly and completely to constitute a responsive RFI.
- B13.3 All Submissions received in response to this RFI will be kept in confidence with the sole purposes of evaluating and developing the best possible strategic option for the City.
- B13.4 Submissions and the information they contain will be the property of the City upon receipt. No Submissions will be returned.

#### **Format**

- B13.5 Respondents should submit one (1) unbound original (marked "original") and three (3) copies.
- (a) Each requirement should be addressed in a separate section clearly marked with the corresponding letter.
- B13.6 The City reserves the right to make additional copies of all Submissions for its internal review process.

### **B14. FORM A: REQUEST FOR INFORMATION APPLICATION (SECTION A)**

- B14.1 Further to B13.1(a), the Respondent shall complete Form A: Request for Information Application, making all required entries.
- B14.2 Paragraph 2 of Form A: Request for Information Application shall be completed in accordance with the following requirements:



- (a) if the Respondent is a sole proprietor carrying on business in his own name, his name shall be inserted;
- (b) if the Respondent is a partnership, the full name of the partnership shall be inserted;
- (c) if the Respondent is a corporation, the full name of the corporation shall be inserted;
- (d) if the Respondent is carrying on business under a name other than his own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.

B14.2.1 If the Submission is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B14.2.

B14.3 In Paragraph 3 of Form A: Request for Information Application, the Respondent shall identify a contact person who is authorized to represent the Respondent for purposes of this RFI.

B14.4 Paragraph 7 of Form A: Request for Information Application should be signed in accordance with the following requirements:

- (a) if the Respondent is sole proprietor carrying of business in his own name, it shall be signed by the Respondent;
- (b) if the Respondent is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
- (c) if the Respondent is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, should be affixed;
- (d) if the Respondent is carrying on business under a name other than his own, it shall be signed by the registered owner of the business name or by the registered owner's authorized officials if the owner is a partnership or a corporation.

B14.5 The name and official capacity of all individuals signing Form A: Request for Information Application should be printed below such signatures.

B14.6 All signatures should be original.

B14.7 If a Submission is submitted jointly by two or more persons, the word "Respondent" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Respondents in the Submission, shall be both jointly and several.

## **B15. PRODUCT SPECIFICATIONS FEATURES AND TECHNICAL DETAILS (SECTION B)**

B15.1 The Respondent should provide a detailed response to each clause in B16 to B25. When describing products, respondents should include details on where the product is currently in its life cycle including when the product was released to market and its anticipated life span.

## **B16. SYSTEM INFRASTRUCTURE**

### **Network Architecture**

B16.1 The City of Winnipeg will be contemplating the most advantageous solution for providing radio service. Possible solutions could include the City owning and operating a multi-Site system where the mobile and portable radios could roam onto a future province wide system owned and operated by another organization. If a future provincial radio system has sufficient coverage and is cost effective, the City will also considering subscribing to that system. Alternatively, a City owned system could be connected to a future provincial system via an Inter-RF Subsystem Interface (ISSI).

- B16.1.1 Provide an overview of the overall Network design philosophy outlining key design advantages and strengths.
- B16.1.2 Provide the details on the maximum number of radio sites and channels for each site.
- B16.1.3 Provide information on voice and data capabilities and integration of voice and data.
- B16.1.4 Describe the various system solution options and their applicability to the City of Winnipeg. Solution options should include, simulcast, multicast, Phase 1 and Phase 2.
- B16.1.5 Describe the advantages of Phase 2 P25 over Phase 1 P25.
- B16.1.6 Describe the disadvantage of Phase 2 P25 compared to Phase 1 P25.
- B16.1.7 Describe your ISSI functionality. On which systems has it been tested? Identify the vendors and the platforms that have been successfully integrated with your radio system via your ISSI

### **Radio Sites**

- B16.2 The City of Winnipeg currently has three (3) radio Sites. Each Site is equipped with a 24 VDC battery backup system with a capacity of 2100 Ah at the Radisson Site and 900 Ah at the other two sites.
  - B16.2.1 Describe the typical radio site requirements including AC and DC power, grounding and floor space requirements.
  - B16.2.2 Describe the typical racking or layout of a radio site
  - B16.2.3 Provide an equipment list for a typical 10 channel site including all hardware/software needed to connect the site into a wide area radio network.

### **Repeaters**

- B16.3 Describe the features of the proposed radio repeaters. Include complete Radio Frequency (RF) and mechanical specifications.
  - B16.3.1 Describe how repeaters may be configured for redundancy switching.
  - B16.3.2 Identify the power consumption of a typical repeater.
  - B16.3.3 Describe the diagnostic capabilities for monitoring the performance and health of the repeaters, both locally and remotely.
  - B16.3.4 Provide the Mean Time to Repair (MTTR) and the Mean Time Between Faults (MTBF) values for the radio repeaters.

### **Inter Site Connectivity**

- B16.4 The City of Winnipeg currently has Fiber connectivity between the three (3) radio Sites. This connectivity is part of the City of Winnipeg corporate data network.
  - B16.4.1 Describe the methods and technologies used to connect each radio site to a wide area network.
  - B16.4.2 Describe how the site and network will operate in the event the inter-site connectivity is interrupted.

B16.4.3 Identify the minimum network capacity required to interconnect a radio site to the wide area network.

### **Central Control/Switch**

B16.5 The City of Winnipeg assumes a wide area network will require a central switch or call routing control point.

B16.5.1 Describe the wide area network' central control facility or how this call routing would be achieved.

B16.5.2 Identify the physical hardware required and the operation of each component.

B16.5.3 Identify redundancies and fault tolerant features.

B16.5.4 Describe the physical space requirements including estimated equipment footprints.

B16.5.5 Based on the needs of the City of Winnipeg, identify the typical total AC power consumption for the central Control/switching facility.

B16.5.6 Identify the thermal loading and environmental considerations for the electronic equipment necessary to perform this function

B16.5.7 Identify the network connectivity requirements, including capacity and security.

B16.5.8 Identify how this central control facility would be connected to another wide area network through an ISSI connection. Details must include specifics that would identify which vendors networks have been verified as compatible.

### **Redundancy**

B16.6 Redundancy and fault tolerance can be provided on many different levels. The City of Winnipeg is interested in a fault tolerant, public safety grade communication system. When responding to the following, please consider how your product's reliability and redundancy are evident in the product and network design.

B16.6.1 Identify the fault tolerant features of the network infrastructure.

B16.6.2 Identify redundant functions or components in the network design.

B16.6.3 Will maintenance of site equipment result in outages or loss of service?

B16.6.4 How do you foresee routine system maintenance and repair impacting the end user?

B16.6.5 Identify major system components (repeaters, sit controllers, switches routers etc.) and describe how a failure of that component will impact the end user and the wide are system.

### **Frequency Bands**

B16.7 Identify which frequency bands your equipment can operate in.

B16.8 Identify which frequency band you would recommend to best satisfy the City of Winnipeg's communication needs and describe why you would make this recommendation.

B16.9 Identify which frequency band you would recommend for a future Province of Manitoba wide area and describe why you would make this recommendation.

## **Interfaces to External Networks**

- B16.10 Identify if your wide area network can be integrated or interconnected with another wide area network. If this is possible describe how this would be accomplished.
- B16.11 Describe any limitations or features that would not be available when using an interconnected network.
- B16.12 What physical connection would be used to interconnect the two networks? Specify the capacity or bandwidth of this connection.
- B16.13 What administration or authorization must be performed for radios to work on both networks?

## **Scalability and Expansion**

- B16.14 The maximum number of voice and maximum number of data channels at any site.
- B16.15 What would be required to expand a site from 10 voice or 10 data channels to the maximum allowed? Identify all the components, or subassemblies that would need to be changed or upgraded.
- B16.16 The maximum number of radio sites that can be supported in the wide area network?
- B16.17 What would be required to increase the number of sites from 5 to the maximum allowed? Identify all the components, or subassemblies that would need to be changed or upgraded.
- B16.18 If a Phase 1 system was initially installed, what modifications or changes would be required to convert the system to a phase 2 system.

## **Training**

- B16.19 Describe the training options available that would allow the City of Winnipeg staff to install, operate, and maintain the infrastructure.
- B16.20 If the City of Winnipeg elects to subscribe to a wide area system operated by another entity, full training would not be required. In this scenario identify what training, if any, would be considered relevant.

## **B17. MOBILE RADIOS**

### **Models**

- B17.1 The City of Winnipeg anticipates that several models of mobile radios will be required. These include the following general descriptions;
- (a) Full Feature (High Tier) – Public safety grade radio with extensive display and control capabilities. Encryption capabilities are mandatory.
  - (b) Basic (High Tier) – Public safety grade radio with minimal display and controls. Encryption capabilities are mandatory.
  - (c) Full Feature (low Tier) – Commercial grade radio with extensive display and control capabilities. Encryption capabilities are desirable.
  - (d) Basic (low Tier) – Commercial grade radio with minimal display and controls. Encryption capabilities are desirable.

- B17.1.1 Identify the model number/designation of P25 radios that are available from your organization.
- B17.1.2 In describing each radio, specify which of the above 4 categories would be applicable.
- B17.1.3 Provide a labeled diagram of the front and rear panels of each model of radio. Labels must clearly identify all displays, controls, switches, jacks, connectors or interfaces.
- B17.1.4 If the radio has a removable microphone or control head, provide a labeled diagram for this component.

### **Controls**

- B17.2 Provide a detailed description for each control found on the radio and microphone or control head, If a control can be programmed for multiple functions, identify the list of possible options.
- B17.3 Specify how each control is activated. Examples may be rotary, toggle, momentary press.

### **Displays**

- B17.4 Provide a diagram of a typical display
- B17.5 Identify the technology used to create the display
- B17.6 Identify the colours available for the display. Describe if the colour is adjustable and if so, how it is adjusted.
- B17.7 Identify what parameters of the display can be altered. Possible characteristics include, contrast, tilt, brightness. Identify how these characteristics can be adjusted.

### **Data Capabilities**

- B17.8 If the mobile radio is data transmission capable, describe this feature and its capabilities.
- B17.9 Describe the physical interfaces that could be used to connect ancillary data devices.
- B17.10 Describe how the operator of the radio would initiate data transmissions.
- B17.11 Provide details of any ancillary devices that will support the reception and transmission of data.

### **Programming**

- B17.12 Describe hardware requirements used to program the mobile radio. This should include the minimum specifications for any computer, connecting cables, or level shift circuits.
- B17.13 Describe the hardware interface on the radio that is used for programming.
- B17.14 Provide an overview of the programming software including the operating system compatibility, archiving of data, cloning or duplication from radio to radio, and security features.
- B17.15 Describe how updates to programming software are distributed
- B17.16 Describe if Over the Air Programming (OTAP) is available? If so what are the capabilities and limitations.
- B17.17 If available, provide a list of mobile radios that have been tested and found compatible with your OTAP system.

## **Firmware Updates**

- B17.18 Describe the process to update the mobile radio firmware. Include details on required hardware interfaces or cables.
- B17.19 Describe the process used to communicate the availability of firmware updates and how the updates are transmitted to the customers.

## **Encryption**

- B17.20 Identify which encryption modes are available for each model of mobile radio.
- B17.21 Identify how many unique encryption keys may be programmed into each radio.
- B17.22 Describe the key management hardware and software.
- B17.23 Describe the methods available to program encryption keys into a radio.
- B17.24 Describe the process that would be followed to efficiently change encryption keys in mobiles in the field with minimal interruption to staff and minimizing service outages.
- B17.25 Describe if Over the Air Rekeying (OTAR) is available? If so what are the capabilities and limitations.
- B17.26 If available, provide a list of mobile radios that have been tested and found compatible with your OTAR system.

## **RF Characteristics**

- B17.27 For each mobile radio model, provide complete RF specifications. As a minimum these should include;
- (a) RF output power;
  - (b) Frequency stability
  - (c) Transmit Frequency Range;
  - (d) Receive Frequency Range;
  - (e) Modulation;
  - (f) Receiver Sensitivity;
  - (g) Receiver selectivity;
  - (h) Receive channel bandwidths;
  - (i) Audio Output power.

## **Accessories**

- B17.28 Provide a list of available accessories for each model of mobile radio.
- B17.29 Provide a detailed description of each accessory listed in part B17.28.

## **Warranty**

- B17.30 For each model of mobile radio, provide details on the standard product warranty.
- B17.31 Provide details on any extended warranty options available.
- B17.32 Provide details on how warranty repairs will be handled. Include details on locations of repair depots, shipping methods, and nominal turn-around times.
- B17.33 Will the City of Winnipeg staff be eligible to complete warranty repair work provided they have received the appropriate training?

### **Repair/ Services**

- B17.34 Provide details on how non-warranty repairs will be handled. Include details on locations of repair depots, shipping methods, and nominal turn-around times.
- B17.35 Will the City of Winnipeg staff be eligible to complete repair work provided they have received the appropriate training?
- B17.36 Will replacement parts or sub-assemblies be available for purchase by the City of Winnipeg repair facility?

### **Environmental**

- B17.37 Provide the minimum and maximum operating temperatures for each mobile radio model;
- B17.38 Provide the minimum and maximum storage temperatures for each mobile radio model;
- B17.39 Provide the shock and vibration specifications for each mobile radio and the test standards or procedure.

### **Physical Dimensions**

- B17.40 Provide the physical dimensions (L x W x H) for each model.
- B17.41 Provide the weight of each model.

### **Approvals**

- B17.42 Provide the Industry Canada type approval number for each mobile radio model.
- B17.43 Provide a list of any other agency approvals (FCC, CEU, etc.)

### **Training**

- B17.44 Describe the training options available that would allow the City of Winnipeg staff to install, operate, and maintain the mobile radios.
- B17.45 If the City of Winnipeg elects to subscribe to a wide area system operated by another entity, would the City of Winnipeg be allowed to maintain and service our own equipment?

## **B18. PORTABLE RADIOS**

### **Models**

B18.1 The City of Winnipeg anticipates that several models of portable radios will be required. These include the following general descriptions.

Full Feature (High Tier) – Public safety grade radio with extensive display and control capabilities. Encryption capabilities are mandatory.

Basic (High Tier) – Public safety grade radio with minimal display and controls. Encryption capabilities are mandatory.

Full Feature (low Tier) – Commercial grade radio with extensive display and control capabilities. Encryption capabilities are desirable

Basic (low Tier) – Commercial grade radio with minimal display and controls. Encryption capabilities are desirable.

B18.1.1 Identify the model number/designation of portable P25 radios that are available from your organization.

B18.1.2 In describing each radio, specify which of the above 4 categories would be applicable

B18.1.3 Provide a labeled diagram of the front, rear and top panels of each model of radio. Labels must clearly identify all displays, controls, switches, jacks, connectors or interfaces.

### **Controls**

B18.2 Provide a detailed description for each control found on the radio, if a control can be programmed for multiple functions, identify the list of possible options.

B18.3 Specify how each control is activated. Examples may be rotary, toggle, momentary press,

### **Displays**

B18.4 Provide a diagram of a typical display

B18.5 Identify the technology used to create the display (LED, LCD, TFT)

B18.6 Identify the colours available for the display. Describe if the colour is adjustable and if so, how it is adjusted.

B18.7 Identify what parameters of the display can be altered. Possible characteristics include, contrast, tilt, brightness. Identify how these characteristics can be adjusted.

### **Data Capabilities**

B18.8 If the portable radio is data transmission capable, describe this feature and its capabilities.

B18.9 Describe the physical interfaces that could be used to connect ancillary data devices.

B18.10 Describe how the operator of the radio would initiate data transmissions.

B18.11 Provide details on any ancillary devices that will support the reception and transmission of data.

### **Programming**

B18.12 Describe hardware requirements used to program the portable radio. This should include the minimum specifications for any computer, connecting cables, or level shift circuits.



- B18.13 Describe the hardware interface on the radio that is used for programming.
- B18.14 Provide an overview of the programming software including the operating system compatibility, archiving of data, cloning or duplication from radio to radio, and security features.
- B18.15 Describe how updates to programming software are distributed.
- B18.16 Describe if Over the Air Programming (OTAP) is available? If so what are the capabilities and limitations.
- B18.17 If available, provide a list of portable radios that have been tested and found compatible with your OTAP system.

### **Firmware Updates**

- B18.18 Describe the process to update the portable radio firmware. Include details on required hardware interfaces or cables.
- B18.19 Describe the process used to communicate the availability of firmware updates and how are the updates transmitted to the customers.

### **Encryption**

- B18.20 Identify which encryption modes are available for each model of portable radio.
- B18.21 Identify how many unique encryption keys may be programmed into each radio.
- B18.22 Describe the key management hardware and software.
- B18.23 Describe the methods available to program encryption keys into a radio.(OTAR, keyloader).
- B18.24 Describe the process that would be followed to efficiently change encryption keys in portables in the field with minimal interruption to staff and minimizing service outages.
- B18.25 Describe if Over the Air Rekeying (OTAR) is available? If so what are the capabilities and limitations.
- B18.26 If available, provide a list of portable radios that have been tested and found compatible with your OTAR system.

### **RF Characteristics**

- B18.27 For each portable radio model, provide complete RF specifications. As a minimum these should include:
  - (a) RF output power;
  - (b) Frequency stability;
  - (c) Transmit Frequency Range;
  - (d) Receive Frequency Range;
  - (e) Modulation;
  - (f) Receiver Sensitivity;
  - (g) Receiver selectivity;

- (h) Receive channel bandwidths;
- (i) Audio Output power.

### **Batteries**

- B18.28 Provide a detail list of batteries available for each model of portable radio.
- B18.29 For each battery in (a) identify the capacity of the battery expressed in milli-Ampere hour (mAh) ratings as well as the chemical composition of the batteries
- B18.30 For each model of battery and a corresponding portable radio, provide an operating time specification. This should be based on a 5%-5%-90% duty cycle. (5% transmit full power, 5% receive full volume, 90% receive standby).
- B18.31 If a portable radio model is delivered with a standard battery, indicate which model of battery is included as standard.
- B18.32 Provide a list of single and multiple unit charging stations for these batteries. Indicate the time required to charge each battery from a 20% capacity to a 100% capacity.
- B18.33 Indicate if the charging stations perform any diagnostics or conditioning of the batteries.

### **Accessories**

- B18.34 Provide a list of available accessories for each model of portable radio.
- B18.35 Provide a detailed description of each accessory listed in part B18.34.

### **Warranty**

- B18.36 For each model of portable radio, provide details on the standard product warranty.
- B18.37 Provide details on any extended warranty options available.
- B18.38 Provide details on how warranty repairs will be handled. Include details on locations of repair depots, shipping methods, and nominal turn-around times.
- B18.39 Will the City of Winnipeg staff be eligible to complete warranty repair work provided they have received the appropriate training?

### **Repair/ Services**

- B18.40 Provide details on how non-warranty repairs will be handled. Include details on locations of repair depots, shipping methods, and nominal turn-around times.
- B18.41 Will the City of Winnipeg staff be eligible to complete repair work provided they have received the appropriate training?
- B18.42 Will replacement parts or sub-assemblies be available for purchase by the City of Winnipeg repair facility?

### **Environmental**

- B18.43 Provide the minimum and maximum operating temperatures for each portable radio model

- B18.44 Provide the minimum and maximum storage temperatures for each portable radio model
- B18.45 Provide the shock and vibration specifications for each portable radio and the test standards or procedure.
- B18.46 Identify which models have water submersion capabilities and provide details on this feature.

### **Physical Dimensions**

- B18.47 Provide the physical dimensions (L x W x H) for each model.
- B18.48 Provide the weight of each model.

### **Approvals**

- B18.49 Provide the Industry Canada type approval number for each portable radio model.
- B18.50 Provide a list of any other agency approvals (FCC, CEU, etc.).
- B18.51 Identify all models and accessories that are intrinsically safe.

### **Training**

- B18.52 Describe the training options available that would allow the City of Winnipeg staff to install, operate, and maintain the portable radios.
- B18.53 If the City of Winnipeg elects to subscribe to a wide area system operated by another entity, would the City of Winnipeg be allowed to maintain and service our own equipment?

## **B19. MOBILE REPEATERS**

### **Models**

- B19.1 The City of Winnipeg anticipates that there will be a requirement to supplement the mobile fleet with several specialty vehicles equipped with mobile repeaters. These devices should be used to receive and rebroadcast a local portable or mobile radio on the wide area network. Similarly the mobile repeater should receive and rebroadcast a talkgroup from the wide area network onto the system used by nearby portables and mobiles.
  - B19.1.1 Identify the model number/designation of mobile repeaters that have been tested and found compatible with your wide area system,
  - B19.1.2 Fully describe each model listed in B19.1.1. Provide an overview of its operation, installation and configuration. Identify any limitation in functionality or loss of P25 functionality.
  - B19.1.3 Provide a labeled diagram of the front and rear panels of each model of mobile repeater. Labels must clearly identify all displays, controls, switches, jacks, connectors or interfaces.
  - B19.1.4 If the radio has a removable microphone or control head, provide a labeled diagram for this component.

### **Controls**

- B19.2 Provide a detailed description for each control found on the radio and microphone or control head, if a control can be programmed for multiple functions, identify the list of possible options.
- B19.3 Specify how each control is activated. Examples may be rotary, toggle, momentary press.

### **Displays**

- B19.4 Provide a diagram of a typical display.
- B19.5 Identify the technology used to create the display.

### **Data Capabilities**

- B19.6 Identify if the mobile repeater will pass data to and from the wide area network.

### **Programming**

- B19.7 Describe hardware requirements used to program the mobile repeater. This should include the minimum specifications for any computer, connecting cables, or level shift circuits.
- B19.8 Describe the hardware interface on the mobile repeater that is used for programming.
- B19.9 Provide an overview of the programming software including the operating system compatibility, archiving of data, cloning or duplication from repeater to repeater, and security features.
- B19.10 Describe how updates to programming software are distributed

### **Firmware Updates**

- B19.11 Describe the process to update the mobile repeater firmware. Include details on required hardware interfaces or cables.
- B19.12 Describe the process used to communicate the availability of firmware updates and how are the updates transmitted to the customers.

### **Encryption**

- B19.13 Identify if the mobile repeater will pass encrypted communications to and from the wide area network.
- B19.14 Does the mobile repeater perform a demodulation/re-modulation during the rebroadcast?
- B19.15 Identify which encryption algorithms are compatible with the mobile repeater.

### **RF Characteristics**

- B19.16 For each mobile repeater model, provide complete RF specifications. As a minimum these should include;
- (a) RF output power;
  - (b) Frequency stability;
  - (c) Transmit Frequency Range;
  - (d) Receive Frequency Range;

- (e) Modulation;
- (f) Receiver Sensitivity;
- (g) Receiver selectivity;
- (h) Receive channel bandwidths.

### **Accessories**

- B19.17 Provide a list of available accessories for each model of mobile radio.
- B19.18 Provide a detailed description of each accessory listed in part B19.17.

### **Warranty**

- B19.19 For each model of mobile repeater, provide details on the standard product warranty.
- B19.20 Provide details on any extended warranty options available.
- B19.21 Provide details on how warranty repairs will be handled. Include details on locations of repair depots, shipping methods, and nominal turn-around times.
- B19.22 Will the City of Winnipeg staff be eligible to complete warranty repair work provided they have received the appropriate training?

### **Repair/ Services**

- B19.23 Provide details on how non-warranty repairs will be handled. Include details on locations of repair depots, shipping methods, and nominal turn-around times.
- B19.24 Will the City of Winnipeg staff be eligible to complete repair work provided they have received the appropriate training?
- B19.25 Will replacement parts or sub-assemblies be available for purchase by the City of Winnipeg repair facility?

### **Environmental**

- B19.26 Provide the minimum and maximum operating temperatures for each mobile repeater model.
- B19.27 Provide the minimum and maximum storage temperatures for each mobile repeater model.
- B19.28 Provide the shock and vibration specifications for each mobile repeater and the test standards or procedure.

### **Physical Dimensions**

- B19.29 Provide the physical dimensions (L x W x H) for each model.
- B19.30 Provide the weight of each model.

### **Approvals**

- B19.31 Provide the Industry Canada type approval number for each mobile radio model.

B19.32 Provide a list of any other agency approvals (FCC, CEU, etc.).

### **Training**

B19.33 Describe the training options available that would allow the City of Winnipeg staff to install, operate, and maintain the mobile repeaters.

## **B20. CONSOLES**

### **Hardware Configuration**

- B20.1 Describe the hardware environment or platform used to perform the dispatch functionality.
- B20.2 Describe any proprietary components or subsystems.
- B14.1 For consoles based on a PC platform, provide the minimum and recommended specifications for the computers.
- B20.3 Identify any points of redundancy or fault tolerance in the hardware design or platform.
- B20.4 Identify the minimum and maximum number of consoles that can be connected to the network.
- B20.5 Provide the electrical requirements for each system component including the AC/DC voltages, current and wattage requirements.

### **Software Configuration**

- B20.6 Describe the various software components/modules or programs required to perform the dispatch console functionality.
- B20.7 Identify the operating system requirements for the software components of the console system.
- B20.8 Describe how the release of software updates are communicated to system administrators or system operators.

### **Connections to Infrastructure**

- B20.9 Describe in detail how the consoles integrate with the wide area network.
- B20.10 Describe the physical interface requirements including capacity.
- B20.11 Describe any security considerations or features for the console connections.
- B20.12 Identify any points of redundancy or fault tolerance in the console network or infrastructure connection.

### **Feature Set**

- B20.13 The City of Winnipeg anticipates the dispatch console functionality will be extensive and compatible with a public safety environment.
- B20.14 Describe how the following features are implemented in the console environment. Please include details on how the feature is enabled/disabled, how is it displayed or indicated, limitations on use:
  - (a) Talkgroup patching;

- (b) Talkgroup simultaneous transmission;
- (c) Emergency call notification;
- (d) Radio ID or Alias display;
- (e) Primary (foreground/select) and Secondary (Background/unselect) monitoring;
- (f) Radio Paging or call alerting;
- (g) Private Calling;
- (h) Access to conventional and Trunking resources;
- (i) Transmit and Receive audio logging interface;
- (j) Indication of incoming (Receive) calls;
- (k) Indication of outgoing (transmit) calls.

B20.14.1 Describe in detail any other feature available in your console platform.

### **Display**

B20.15 Describe the console display requirements including minimum display size, and resolution.

B20.16 Is touch screen available as a standard feature or as an option?

### **Transmit Audio**

B20.17 Fully describe the transmit audio capabilities and specifications of the dispatch console platform. Please include the audio bandwidths, audio encoding standards, built in signalling tones and methods to activate each path or signal.

B20.18 Identify via a block or similar diagram, the various transmit audio paths between the dispatcher and the interface to the wide area network.

B20.19 Describe the press-to-talk (PTT) switches available as standard and any options available.

### **Receive Audio**

B20.20 Fully describe the receive audio capabilities and specifications of the dispatch console platform. Please include the audio bandwidths, decoding standards, built in decoders.

B20.21 Identify via a block or similar diagram, the various receive audio paths between the dispatcher and the interface to the wide area network.

B20.22 Describe the speaker systems available as standard or as options.

### **Encryption**

B20.23 Describe how encrypted audio is decoded at the consoles. Include where the decoding occurs.

B20.24 Assuming field users utilize encrypted mobile or portable radios, identify via a block or similar diagram, where un-encrypted audio is available in the network diagram.

- B20.25 If encryption and decryption occur in the console platform, identify where this occurs and how it is enabled or disabled.
- B20.26 What hardware or software is required to program or set encryption modes and encryption keys.
- B20.27 Describe the number of encryption keys that can be accessed or utilized by the console system.

### **Programming**

- B20.28 Describe the application used to program or administer the dispatch console system.
- B20.29 Describe which features or parameters are adjustable by a console operator.
- B20.30 Describe which features or parameters are adjustable only by a system administrator.

### **Interfaces to external Systems**

- B20.31 Fully describe any interfaces available to external systems available through the console system. These could include, remote paging, door openers, data system, AVL, CAD or remote control or remote monitoring systems.
- B20.32 Indicate which interfaces are standard and which are available as options.

### **Accessories**

- B20.33 Provide a list of optional devices available for the dispatch console system.
- B20.34 Provide a description of each item listed in B20.33.

### **Warranty**

- B20.35 For each major console system component, provide details on the standard product warranty.
- B20.36 Provide details on any extended warranty options available.
- B20.37 Provide details on how warranty repairs will be handled. Include details on locations of repair depots, shipping methods, and nominal turn-around times.
- B20.38 Will the City of Winnipeg staff be eligible to complete warranty repair work provided they have received the appropriate training?

### **Installation Requirements**

- B20.39 Describe any pre-installation requirements such as grounding, ventilation, power conditioning.
- B20.40 Provide a list of telephone, data, time standard or network connections that will be required.

### **Training**

- B20.41 Describe the training options available that would allow the City of Winnipeg staff to install, operate, and maintain the dispatch console system.



## **B21. SYSTEM ADMINISTRATION AND REPORTING**

### **System Control**

- B21.1 Considering the wide area network, identify and describe what features or parameters can be adjusted, or set remotely from a control point.
- B21.2 Describe what restrictions or security features are in place to prevent unauthorized changes from occurring.
- B21.3 Describe what records or archives are kept of changes and configurations.
- B21.4 Describe the hardware and software required to perform the System control function.
- B21.5 Identify any system redundancies or fault tolerant features of the system control environment.

### **System Monitoring**

- B21.6 Considering the wide area network, identify and describe what features or parameters can be monitored, viewed or logged.
- B21.7 Describe what restrictions or security features are in place to prevent unauthorized access to this information.
- B21.8 Describe what records or archives are kept of system performance or status changes.
- B21.9 Describe the hardware and software required to perform the System Monitoring function.
- B21.10 Identify any system redundancies or fault tolerant features of the system control environment.

### **Mobile/Portable provisioning**

- B21.11 Detail the process to enable a mobile or portable radio on the wide area system.
- B21.12 Identify the security features to prevent unauthorized changes from occurring.
- B21.13 Describe what records or archives are kept of changes.
- B21.14 Describe the hardware and software required to perform the System Monitoring function.

### **Reports**

- B21.15 Describe the usage, monitoring and statistical reports that are available from the System Administration Platform.
- B21.16 Describe the ability to create customized reports,

### **Training**

- B21.17 Describe the training options available that would allow the City of Winnipeg staff to install, operate, and maintain the System administration system.
- B21.18 Upon successful completion of training, would the City of Winnipeg staff be allowed to perform system upgrades, patches and maintenance work?

## **B22. ANNUAL MAINTENANCE**

- B22.1 Identify the typical preventative maintenance or testing that would be required to support a wide area network, including the system infrastructure, system administration, and dispatch console systems. Include the maintenance frequency for how often this work should be performed. (annually, monthly etc.)
- B22.2 Identify who would perform the work detailed in B22.1 assuming proper training has been completed.
- B22.3 Identify any tools or test equipment required to perform the work detailed in (a)

## **B23. ANNUAL SUPPORT**

- B23.1 For each system component, identify if any annual support packages are available.
- B23.2 Describe in detail what services or benefits are included in each support package listed in B23.1.
- B23.3 Identify if any training opportunities are offered periodically. Include how the availability of training would be communicated to the City of Winnipeg.

## **B24. COMPANY PROFILE**

### **History**

- B24.1 Provide an overview of the History of your organization.
- B24.2 Provide specific details on your organization's experiences and history with the development, testing and trialing of P25 products. Specifically detail any APCO 25 or industry committees that your organization has participated on.

### **Recent Experiences**

- B24.3 Identify at least three recent projects completed by your organization of similar scope and complexity as the City of Winnipeg.
- B24.4 Identify any provincial, state, or similar wide area networks projects completed or in progress by your organization. Please specify the current status of these projects.

### **Vision for Future**

- B24.5 Provide an overview of your organizations short term and long term plans relevant to the P25 and Land Mobile Radio (LMR) marketplace.
- B24.6 Provide a comment or recommendation on what your organization feels is the optimum solution for LMR radio in the province of Manitoba.
- B24.7 Describe your organizations Communication System Engineering capabilities. Provide specific details on the number of Engineers available, their experience with similar projects, and scope.
- B24.8 Describe your organizations ability to provide onsite technical support or maintenance. Provide specific details on the number of technician/technologists available, and their experience with the proposed equipment.

B24.9 Describe your organization's after sale support practises. Provide specific details on the methods of contact to request service, or support; hours of support; and typical response times.

## **B25. PRICE ESTIMATES**

### **Infrastructure**

B25.1 Provide a budgetary estimate for a wide area system comprised of 5 radio sites, minimum 9 voice channels per site and portable coverage throughout the City of Winnipeg.

B25.2 Provide a budgetary cost estimate for an ISSI system interface.

### **Wide Area System Hosting Alternative**

B25.3 If your organization would provide a wide area system to the City of Winnipeg, whereby the City would pay a monthly or annual fee for service, provide an estimate of this service fee.

### **Mobile**

B25.4 Provide a budgetary price for each mobile model below:

- (a) Full Feature (High Tier) with encryption;
- (b) Basic (High Tier) without encryption;
- (c) Full Feature (low Tier);
- (d) Basic (low Tier).

B25.5 Provide the cost and details of any extended warranty for product listed in B25.4.

### **Portables**

B25.6 Provide a budgetary price for each portable model below:

- (e) Full Feature (High Tier) with encryption;
- (f) Basic (High Tier) without encryption;
- (g) Full Feature (low Tier);
- (h) Basic (low Tier).

B25.7 Provide the cost and details of any extended warranty for product listed in B25.7.

### **Consoles**

B25.8 Provide a budgetary price an all-inclusive dispatch console system consisting of 6 consoles at one location. Cost should include displays, computers, keyboard/mice, and any other hardware or software necessary

B25.9 Provide the cost and details of any extended warranty for product listed in B25.8.

### **Annual Support/Licences**

- B25.10 Provide a budgetary price for the annual support or licensing for all system components. Prices should be based on a 5 site system with 6 consoles and 1500 mobile/portable radios.
- B25.11 Indicate what support agreements/licenses are mandatory, recommended or optional(discretionary).
- B25.12 Provide an estimate of the costs to upgrade the wide area network system's software once every 5 years.