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| FORM N: REQUIREMENTS AND SPECIFICATIONS |
| **WASTEWATER REPORTING SOLUTION** |
| Instructions for filling out Form N: Requirements and Specifications 1. Complete Form N: Requirements and Specifications
2. Ensure that you indicate which alternative is being proposed in the Proposal Type section below
3. Follow the proposal instructions in the Proposal Instructions section below
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| **PROPOSAL INSTRUCTIONS**1. For each mandatory requirement, provide a Y (Yes) or N (No), indicating whether your solution can meet the requirement. Y indicates that the solution you are proposing will meet the requirements listed in the requirement statement. N indicates that the solution you are proposing will not meet the requirements.
2. **For each high level rated requirement, provide a response in the section below the requirement section where the Proponent response is indicated with <>.** Be specific, detailed, and include images, diagrams, links, etc. where appropriate to support the response. The response should address all granular requirements (if any) listed below the high level requirement.
3. **For each granular rated requirement (except where indicated N/A via grey shading), indicate which Proponent response code best describes your solution:**

**Y – Available Out of the Box:** Solution for the requirement is currently available in the existing product “out of the box”. Configuration may be required to enable the feature (requirement will be met through changes to settings of tables, switches, and rules without modification to the source code). Requirement is installed and operational at other sites and can be demonstrated to the City of Winnipeg.**C – Available via Customization:** Solution for the requirement is not currently available in the existing product “out of the box”, but may be incorporated via customization of the solution components. Requirement will be met through changes to the source code which would require analysis and re-application during updates, upgrades, or when applying software patches.**F – Future Availability:** Solution for the requirement is not currently available, but will be available in an upcoming product release. If this option is indicated, include the date/timeframe when the requirement will be available for implementation.**3 – Third Party Supplied:** Solution for the requirement is expected to be met by using a third party vendor’s existing product, either integrated or non-integrated. **N – Not Possible:** Solution for the requirement will not be provided by the Proponent.**Notes:**1. An omitted response will be assumed to be the same as a response code of “N”.
2. Any deviation from the response code will be re-coded at the discretion of the City of Winnipeg.
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| PROPOSAL TYPEIndicate the Alternative that this response applies to (check one only) | Check One |
| **Alternative 1 – City of Winnipeg Solution Hosting**A commercial off-the-shelf software package implementation where the City of Winnipeg will host the application and any required components on our infrastructure and will take full or partial responsibility for maintenance of the application, working closely with the Proponent. |  |
| **Alternative 2 – Proponent Solution Hosting**A commercial off-the-shelf software package implementation where the Proponent will host all aspects of the solution, including all server-based hardware, software, and databases (structured and non-structured data). The Proponent will take full responsibility for maintenance and upgrading activities related to the application and related components, with oversight provided by the City of Winnipeg. |  |

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| **Form N: Mandatory Requirements** |
| **E4 Mandatory Requirements** | **RFP Reference #** | **Proponent Response (Y, N)** |
| Proponent must provide at least one (1) reference for a contract in the water or wastewater industry, as per the requirements defined in section B11. | E4.1 |  |
| System manuals must be provided as hard and soft copies, as per the requirements defined in section B13. | E4.2 |  |
| The solution must have direct access to at least five (5) years of historical data, or all of the historical data for parameters which have been added within the past five (5) years, as per the requirements defined in section B14. | E4.3 |  |
| The information captured within the *Operating Records* must be consistent with the definition and requirements outlined in the Manitoba Government’s *Water and Wastewater Facility Operators Regulation 77/2003, section 33*, as per the requirements defined in section E5.1. | E4.4 |  |
| The solution must provide the capability to allow for the manual entry of plant measurements, the ability to view captured data, provide a message if an entry is invalid, as per the requirements defined in section E5.1. | E4.5 |  |
| The solution must provide the capability to monitor Control Parameters events, as per the requirements defined in section E5.2. | E4.6 |  |
| The solution must provide the ability to configure and manage control parameters, set limits and targets for control parameters, define rules and alerts based on control parameters, and track and display data lineage, as per the requirements defined in section E5.2. | E4.7 |  |
| The solution must support the creation and management of Data Capture Forms and provide the ability to define and enforce validation rules, as per the requirements defined in section E5.2. | E4.8 |  |
| The solution must allow users to navigate, select, view and interpret data in a variety of formats, and the ability to save data query results in a variety of formats, as per the requirements defined in section E5.3. | E4.9 |  |
| The solution must provide user configurable process monitoring dashboards and performance tracking capabilities, as per the requirements defined in section E5.3. | E4.10 |  |
| The solution must provide the ability to generate and distribute predefined reports on a regular basis, as per the requirements defined in section E5.3. | E4.11 |  |
| The solution must support integration with external sources, as per the requirements defined in section E5.4. | E4.12 |  |
| The solution must support the ability to administer automated data feed validation, including the ability to purge data by a set schedule, set parameters for data irregularities, and transform data, as per the requirements defined in section E5.4. | E4.13 |  |
| The solution must be capable of being run on Windows Server 2012 operating system for pre-production and production environments, as per the requirements defined in section E6.1. | E4.14 |  |
| The solution must provide security features capable of integrating with Active Directory, as per the requirements defined in section E6.1. | E4.15 |  |
| The solution must be available as per the requirements defined in section E6.1. | E4.16 |  |

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| **Form N: Experience of Proponent**  |
| **B11 Experience of Proponent** | **RFP Reference #** | **Proponent Response**  |
| **B11.1** The Proponent should submit information in sufficient detail for the City to evaluate the qualifications of the Proponent by providing the items listed below.*Include any additional information regarding the experience of the Proponent that may be of interest to the City of Winnipeg.* | B11.1 |  |
| (a) Brief overview of your organization, company history, professional services offered, markets serviced and customer base. | B11.1(a) |  |
| (b) Details of your organization and management structure. | B11.1(b) |  |
| (c) The number of municipal government contracts similar in size and scope. | B11.1(c) |  |
| (d) The details of the scope, complexity and value of each contract. | B11.1(d) |  |
| (e) Three (3) references for recent projects similar in size and scope, preferably for municipal government clients. Each reference should consist of a company name, contact name, email address, phone number, and a brief description of the project. At least one reference must be for a water or wastewater contract. | B11.1(e) |  |
| *<Experience of Proponent Response>* |

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| **Form N: Implementation** |
| **B12 Implementation** | **RFP Reference #** | **Proponent Response**  |
| **B12.1** Provide your specific project approach for installation of the application and a detailed project plan. Indicate expectations for skills, roles, and responsibilities for City of Winnipeg and Proponent resources. Include planning for testing and go-live approach. Methodology should be presented in accordance with the Scope of Services identified in D2.*Include any additional information regarding implementation that may be of interest to the City of Winnipeg.* | B12.1D4 |  |
| (a) Project Plan: Provide details of the project team, project team qualifications, timeline/schedule including duration and effort, project assumptions and constraints, expected deliverables and milestones for each phase, a description of the risk management procedures and approach, a description of the issue management procedures and approach, and a description of the change management procedures and approach. | B12.1(a) |  |
| (b) Effort and Staff Skills: Provide details of the amount of time and type of staff that the City of Winnipeg will need to provide for each of the following project phases: defining the project plan, installation, design and specification, solution configuration, data migration, testing and go-live and end user training. | B12.1(b) |  |
| (c) Testing: Provide information about your overall approach to testing and validating the solution. Include all relevant testing phases such as system testing, integration testing, User Acceptance Testing (UAT), performance/load testing, etc. | B12.1(c) |  |
| (d) Go-Live Approach: Describe your recommended roll out strategy e.g. big bang, parallel processing, location based, etc. Describe your recommendations for go-live support including onsite resources, duration, roles and responsibilities for City of Winnipeg staff, final cut-over, rollback strategy, etc. | B12.1(e) |  |
| *<Implementation Proponent Response>* |

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| **Form N: Training** **and Support** |
| **B13 Training** **and Support** | **RFP Reference #** | **Proponent Response**  |
| **B13.1** Explain your training methodology and approach, including all relevant information regarding knowledge transfer to City of Winnipeg staff. Ensure your response aligns with the training prices in Form B of the RFP document.*Include any additional information regarding training and support that may be of interest to the City of Winnipeg.* | B13.1 |  |
| (a) Approach: Describe the proposed schedule, participants, and curriculum and include any prerequisite knowledge required of each of the user types: Administrator (responsible for control parameter and event notification configuration), End User (Plant Operators and Plant Supervisors), Process Analyst (responsible for data management and administration), and IST (technical resources). Specify logistical requirements for on-site training e.g. classroom, white board, internet access, etc. Note that the City will provide computers and other necessary equipment. | B13.1(a) |  |
| (b) System Manuals: Provide a listing of all user, administrator, and installation/IT manuals, along with any other associated instructional reference materials that will be made available to the City once the contract is awarded. Documentation should be provided as hard and soft copies. | B13.1(b) |  |
| *<Training and Support Proponent Response>* |
| **Form N: Historical Data Access** |
| **B14 Historical Data Access** | **RFP Reference #** | **Proponent Response**  |
| **B14.1** The solution should be able to access historical DCS data, LIMS test results, and logbook entries. The purpose of this is to facilitate long term data analysis and trending. Five to ten years of historical data should be available in the new solution. Describe your approach for accomplishing this task, with reference to the components listed below.*Include any additional information regarding historical data access that may be of interest to the City of Winnipeg.* | B14.1 |  |
| (a) Resources: Describe roles and responsibilities of Proponent and City of Winnipeg staff who will participate in the data conversion. Describe what tools you can provide to facilitate access of sample, test, and audit data. | B14.1(a) |  |
| (b) Approach: Provide your approach/methodology that will be used for analysis, design, data testing and validation, and implementation. Describe success factors for achieving our data access goals and any constraints, limitations, or risks related to this task. | B14.1(b) |  |
| *<Historical Data Access Proponent Response>* |

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| Form N: Business Requirements |
| **E5 Business Requirements** | RFP Reference # | ProponentResponse(Y, C, F, 3, N) |
| **E5.1 Operational Data Entry** |
| 1. **Operational Process Data**: Describe how the solution provides the capability to support the manual recording of information collected by plant operators during a shift within a single plant location. The information to be captured within the solution and supporting activities can be categorized as Operator Records and Process Control Readings as described below. For both types of information, and their corresponding activities, describe how your solution meets the characteristics listed below.

*Include any additional information regarding operational process data that may be of interest to the City of Winnipeg.* | E5.1(a) |  |
| 1. Operator Records: Describe how the proposed solution provides the capability to log *Operating Records* for each operational shift within the plant. The information captured within the *Operating Records* should be consistent with the definition and requirements outlined in the Manitoba Government’s *Water and Wastewater Facility Operators Regulation 77/2003, section 33*. The activity of entering *Operating Records* during a single shift shall define a single unit-of-work that should be formally submitted to the solution, on or before the end of shift.
 | E5.1(a)(i) |  |
| 1. Process Control Readings: Describe how the proposed solution provides the capability to record plant measurements taken manually by operators based on a predefined schedule. All measurement readings should include the operator, time of measurement and any additional comments. The activity of capturing Process Control Readings should be performed on a daily basis and submitted as a single unit-of-work.
 | E5.1(a)(ii) |  |
| 1. View Previous Records: The solution should provide the ability for the user to view previously captured data, while performing data capture activities within a form. When entering Operator Records for the current shift, the end-user should have simple access to entries made in at least the prior 4 shifts. When entering Process Control Readings for the current day, the end-user should have simple access to Operator Records from at least the prior 2 days.
 | E5.1(a)(iii) |  |
| 1. Corrections: The solution should allow authorized users to edit submitted data (unit-of-work). Any changes to submitted data should be fully audited and require comments by the user performing the changes.
 | E5.1(a)(iv) |  |
| 1. Mobile Capability: The solution should support the use of mobile devices such as tablets and smartphones for entering both Operational Records and Process Control Readings.
 | E5.1(a)(v) |  |
| *<Operational Process Data Proponent response>* |
| 1. **Auditing:** Describe how the solution provides full auditing of entries and edits of all operational process data. Describe how your solution meets the characteristics listed in the sub-sections below.

*Include any additional information regarding auditing that may be of interest to the City of Winnipeg.* | E5.1(b) |  |
| 1. Audit Information: Audit trail information should include user ID, date/time of entry /change (where applicable), and should track changes to both transaction data and WRS configuration.
 | E5.1(b)(i) |  |
| 1. Audit Trail Viewing: Audit trail information and audit trail reports should only be accessible to users with specific privileged roles.
 | E5.1(b)(ii) |  |
| *<Auditing Proponent response>* |
| 1. **Operational Data Management:** Describe how the solution provides the capability to manage processes governing the activities related to operational data capture within the plant. This includes the scheduling of data capture activities, the definition of events and conditions to trigger notifications and related review and approval functions. Describe how your solution meets the characteristics listed below. Include any additional information regarding operational data management support that may be of interest to the City of Winnipeg.

*Include any additional information regarding operational data management that may be of interest to the City of Winnipeg.* | E5.1(c) |  |
| 1. Data Capture Scheduling: The solution should provide the ability to predefine schedules for the regular capture of operational data. Scheduling of data capture should include the ability to stipulate non-collection days, such as statutory holidays and weekends where applicable.
 | E5.1(c)(i) |  |
| 1. Submission Workflow: The solution should provide the ability to manage data entry activities (unit-of-work) through a submission process. Upon submission, the solution should verify all mandatory entries are included. Upon successful submission, the unit-of-work should be no longer editable by the original user and a configurable supervisor should be notified.
 | E5.1(c)(ii) |  |
| 1. Event Monitoring and Notification: The solution should provide the capability to monitor Control Parameter values relative to any predefined event conditions / rules (as defined in section E5.2). Upon recognizing a condition or event, the solution should perform the prescribed actions (send notifications, create incident records, etc.) as described in section E5.2.
 | E5.1(c)(iii) |  |
| 1. Incident Management: The solution should support the ability automatically (per iii) or manually create and track Incidents related to Control Parameter deviations or other events defined in Appendix B. Once created, incidents should be managed in the solution in accordance with the Exception workflow defined in Appendix B. Any incidents automatically created by the solution should notify operator via email.
 | E5.1(c)(iv) |  |
| *<Operational Data Management Proponent response>* |
| **E5.2 Data Management and Configuration** |
| 1. **Control Parameter Administration:** Explain how the solution provides the ability to define, configure and manage “process control parameters”. Control parameters are time-based data values which are of either Discrete or Calculated type as described below. For both types of Control Parameters, describe how your solution meets the functional characteristics listed below.

*Include any additional information regarding control parameter administration that may be of interest to the City of Winnipeg.* | E5.2(a) |  |
| 1. Control Parameter Types: The solution should support the ability to define Control Parameters which derive their value from either a Discrete Data Source or are derived from a Calculation within the solution.
 | E5.2(a)(i) |  |
| 1. Discrete Control Parameters: The solution should support the ability to define Control Parameters which are based on time-based data imported directly from an external system or a file-based data sources (see section 5.4) or manually entered Operational Data (see section E5.1).
 | E5.2(a)(ii) |  |
| 1. Calculated Control Parameters: The solution should provide the ability to define Control Parameters which are calculated from one or more Discrete Control Parameters. The solution should provide common statistical functions (average, mean, minimum, maximum, moving average, standard deviation, etc.) for computing aggregate metrics over various time periods (daily, weekly, monthly, etc.). Calculated Control Parameters should be updated automatically, if/when their dependent data source value change. If calculated values are persisted in the solution, previous values should be available for viewing and reporting.
 | E5.2(a)(iii) |  |
| 1. Control Parameter Limits & Targets: The solution should provide the ability to optionally define for any Control Parameter a “target value” and one for more “control limits”. Limit and target values should be available for display on charts and/or inclusion in reports, Dashboards and Scorecards. The specification of limit and target values should include applicable effective dates, to account for changes over time.
 | E5.2(a)(iv) |  |
| 1. Metadata: The solution should provide the ability to define and capture metadata for any and all Control Parameters. Metadata should include information regarding the Type of Control Parameter (Discrete or Calculated), data source(s), the business context of the parameter (plant, location, process area, equipment, etc.) and any other pertinent information.
 | E5.2(a)(v) |  |
| 1. Events and Notifications: The solution should provide the ability to define Event and Rules for Control Parameters, which can be used to trigger notifications (see section E5.2) to end-users. Defined events should include when a Control Parameter value crosses a defined *Limit* and when a Control Parameter value maintains a deviant value for a prolonged duration.
 | E5.2(a)(vi) |  |
| 1. Traceability: The solution should provide the ability to track and display data lineage information for all Control Parameter data. Such information should include data source, data transformation and/or computation performed and any audited changes.
 | E5.2(a)(vii) |  |
| *<Control Parameter Administration Proponent response>* |
| 1. **Data Capture Administration:** Describe how the solution supports the creation and management of Data Capture Forms to be used for the two Operational Data Entry activities as described in section E5.1. The design of forms within the solution should include the following capabilities listed below.

*Include any additional information regarding data capture administration that may be of interest to the City of Winnipeg.* | E5.2(b) |  |
| 1. Forms Administration: The solution should provide the ability to create forms capable of entering and editing data mapped to one or more *Discrete Control Parameters* that share a common context (time range and location). Access to forms should be restricted to specific roles and user groups.
 | E5.2(b)(i) |  |
| 1. Forms Data Validation: The solution should provide the ability to define validation rules governing individual data elements on the form (field-based validation) and on the collection of data elements on the form (form-based validation). Validation rules of form data elements should be consistent with the Configuration Parameters to which they are mapped. Forms should not allow data to be stored in the form (database) if a corresponding / applicable validation rule fails. Forms should present visual warning messages to the end-user, when validation fails. Forms should allow a user to explicitly override a validation rule and store data, provided the user enters a comment.
 | E5.2(b)(ii) |  |
| *<Data Capture Administration Proponent response>* |
| **E5.3 Reporting** |
| 1. **Data Exploration:** Explain how the solution provides a versatile and robust platform which allows users to navigate, select, view and interpret data in a variety of formats (tabular and graphical). The solution should provide data drill-down capability from charts and aggregated data, from charts, and includes the ability to query results and other pertinent data as well as formal predefined reports. Explain how the solution is able to create, and automatically update, control charts and control limits, and display the latter graphically and numerically. Explain how the solution supports trend analysis.

*Include any additional information regarding data exploration that may be of interest to the City of Winnipeg.* | E5.3(a) |  |
| 1. Visualization: The solution should provide the ability to view historical and current and archived data records, in the form of a screen view, ad hoc query, or formal report. Data availability should allow data from different locations to be viewed, regardless of user location.
 | E5.3(a)(i) |  |
| 1. Control Charts: The solution should provide the ability to create a variety of data visualizations including but not limited to: individual X, Multiple Y, X-Bar & R, Moving Range, Bar, Line, Pie, etc., the ability to provide automatic data retrieval and plotting, and the ability to track and display user defined control limits as well as display limits based on plotted data.
 | E5.3(a)(ii) |  |
| 1. Statistical Analysis: The solution should provide the ability to apply statistical trending rules to the charts and identify points that follow a rule or trend, and the ability to compare like datasets over user defined time periods.
 | E5.3(a)(iii) |  |
| 1. Export Formats: The solution should provide the ability to save data query results and structured reports in a variety of appropriate formats, including but not limited to: PDF, HTML, DOC, XLS, XML, TXT, CSV.
 | E5.3(a)(iv) |  |
| *<Data Exploration Proponent response>* |
| 1. **Process Performance Monitoring:** Explain how the solution provides the ability to create standardized process monitoring dashboards and performance scorecards, based on Control Parameters and Key Performance Indicators (KPIs) managed within the solution, and with features to support further investigation into KPIs.

*Include any additional information regarding process performance monitoring that may be of interest to the City of Winnipeg.* | E5.3(b) |  |
| 1. Dashboards: The solution should be capable of developing dashboard-style data visualizations to present the current status of key Control Parameters related to a plant of specific operational area / unit within a plant. Dashboards should be highly interactive, with controls for altering time-ranges and for drill-down into specific data elements.
 | E5.3(b)(i) |  |
| 1. Performance Tracking: The solution should provide the ability to define KPIs based on specific Control Parameters within the solution, typically Calculated Control Parameters. KPIs and their respective targets should be capable of inclusion on Dashboards and/or organized into Performance Scorecards. The solution should provide graphical and tabular data visualizations, and the ability to drill down from KPIs to examine a further level of detail.
 | E5.3(b) (ii) |  |
| *<Process Performance Monitoring Proponent response>* |
| 1. **Automated Reporting:** Explain how the solution is able to define, execute, store and distribute pre-defined, standardized document-style reports. The solution proposed should incorporate the capabilities listed below.

*Include any additional information regarding automated reporting that may be of interest to the City of Winnipeg.* | E5.3(c) |  |
| 1. Tools and Templates: Provide a listing and brief description of the report authoring tools and templates provided in the solution. The solution should provide the ability to create complex, multi-page document reports that include both tables and charts. The solution should provide the capability for end-users to provide annotation text and embedded images in published reports.
 | E5.3(c)(i) |  |
| 1. Scheduling and Distribution: The solution should provide the ability to generate and distribute predefined reports on a regular basis (daily, weekly, monthly) to specific user roles and groups. The solution should have the ability to provide either a report attachment or a link to a report. The solution should have the ability to maintain report distribution lists / groups with individual email addresses.
 | E5.3(c)(ii) |  |
| *<Automated Reporting Proponent response>* |
| **E5.4 Data Integration** |
| 1. **LIMS Integration:** Explain how the solution supports integration with the City’s LIMS (Thermo-Scientific Sample Manager), specifically for the purpose of utilizing laboratory test results within process control decision making. The solution should provide capabilities to import laboratory test results and sample information on a pre-defined, recurring schedule (minimum twice per day). Describe system features and functions available out of the box or with minimal configuration that support this integration.

*Include any additional information regarding LIMS integration that may be of interest to the City of Winnipeg.* | E5.4(a) |  |
| 1. Approach: The solution should provide the ability to integrate directly to the COW LIMS (SampleManager 11.2 – Thermo-Scientific). Alternately, but less desirable, the LIMS can produce data exports which may serve as an intermediary data transfer mechanism, into the proposed WRS solution.
 | E5.4(a)(i) |  |
| 1. Mapping: The solution should provide the ability to easily map LIMS data to corresponding Control Parameters defined in the solution, as described in section E5.2.
 | E5.4(a)(ii) |  |
| *<LIMS Integration Proponent response>* |
| 1. **Plant Process Control System (PCS) Data Integration:** Explain how the solution supports integration with plant operational data for the purpose of using the data for decision making. Structured plant operational data resulting from process monitoring activities should be automatically imported into the solution based on a recurring schedule (minimum 8 hour intervals). Describe system features and functions available out of the box of with minimal configuration that support this integration. Describe any additional plant metrics that may be incorporated into the solution during plant expansion.

*Include any additional information regarding plant PCS data integration that may be of interest to the City of Winnipeg.* | E5.4(b) |  |
| 1. Approach: The solution should provide the ability to integrate directly to existing DCS-based system used in the three treatment plants (Bailey/ABB Process Control View (PCV) version 5.4). Alternately, but less desirable, existing data exports from the current DCS may be used as an intermediary data transfer mechanism, for importing into the proposed WRS solution.
 | E5.4(b)(i) |  |
| 1. Mapping: The solution should provide the ability to easily map PCS data to corresponding Control Parameters defined in the solution, as described in section E5.4.
 | E5.4(b)(ii) |  |
| 1. Flexibility: The solution should be capable of transitioning from the existing DCS-based systems to the new Citect SCADA systems, utilizing a Wonderware Historian, in the next 3-5 years.
 | E5.4(b)(iii) |  |
| 1. Expansion: The solution should be capable of introducing additional plant information into the solution, with minimal to no IT staff involvement.
 | E5.4(b)(iv) |  |
| *<Plant Process Control System (PCS) Data Integration Integration Proponent response>* |
| 1. **Other Systems Integration:** Explain how the proposed solution, including all software products, components and modules, is capable of integrating with other enterprise systems, such as Work Order Management systems.

*Include any additional information regarding other systems integration that may be of interest to the City of Winnipeg.* | E5.4(c) |  |
| *<Other Systems Integration Proponent response>* |
| 1. **Data Quality Administration:** Explain how the solution supports the ability to administer automated data feed validation, for the purpose of monitoring and improving the quality of data values relative to the control parameter limits (section E5.2). Data quality administration includes the ability to purge data by a set schedule, set parameters for data irregularities, and transform data.

*Include any additional information regarding data quality administration that may be of interest to the City of Winnipeg.* | E5.4(d) |  |
| 1. Business Rules Configuration: The solution should provide the ability to configure data cleansing, data transformation, and data validation business rules for automated data imports from LIMS, PCS and all other external systems. The solution should provide the ability to flag records as reportable for different categories, e.g. reportable for compliance, excluded from reports, etc.
 | E5.4(d)(i) |  |
| 1. Data Exception Handling: The solution should provide the ability to configure and manage data exception workflows for automated data import, based on business rules. Data exception handling workflows should include the ability to notify data quality analysts of exceptions and provide reporting/viewing of the data and related business rules that triggered the exception. Workflows should also allow data correction activities to be performed by an authorized user and/or via business rules automatically.
 | E5.4(d)(ii) |  |
| 1. Change Data Capture: The solution should have the ability to recognize any data values that have changed since a prior import, if applicable. The solution should allow all changes to be included, with any changes audited and available for review in the future.
 | E5.4(d)(iii) |  |
| *<Data Quality Administration Proponent response>* |

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| Form N: Technical and Non-Functional Requirements |
| **E6 Technical and Non-Functional Requirements** | RFP Reference # | ProponentResponse(Y, C, F, 3, N) |
| 1. **Technical Architecture:** Describe the overall architecture of your proposed solution. Include any relevant models / diagrams and descriptions necessary to convey the following architectural perspectives of your solution (business, application, information and technology).

*Include any additional information regarding technical architecture that may be of interest to the City of Winnipeg.* | E6.1(a) |  |
| 1. Business architecture: Describe how your solution is designed to meet the specific business functions and processes envisioned for the COW’s Wastewater Reporting Solution per section E3.
 | E6.1(a)(i) |  |
| 1. Data architecture: Describe how information is organized, secured/controlled, managed and maintained within your solution. Include a description of the key data entities relevant to the scope of the WRS and how these entities are managed over the long-term of the solution. Include any references to data / information that is persisted and managed internal to your solution and/or linked to any external systems.
 | E6.1(a)(ii) |  |
| 1. Application architecture: Describe the discrete modules and components of your solution, and how they relate to the required functions of WRS. Include a description of the underlying technology platform (e.g. Java, .Net, etc.) and industry standards on which your solution is based.
 | E6.1(a)(iii) |  |
| 1. Technical architecture: Describe the “typical” network topology and deployment configurations for your solution in municipal wastewater implementations. Include all deployment nodes (application servers, database servers, end-user workstations, mobile devices, etc.) and the respective deployment unit(s) (applications, modules, components) deployed on each. Include any relevant network components (firewalls, zones, etc.) and/or enterprise systems (Directory Server, Mail Server, etc.) as applicable.
 | E6.1(a)(iv) |  |
| *<Technical Architecture Proponent response>* |
| 1. **Infrastructure Requirements:** Describe the recommended infrastructure specifications required to host and manage your solution within the COW enterprise. Recommendations should be provided for all servers, end-user workstations and devices, and include specifications for operating system, CPU, RAM, and local storage. Where multiple configuration options exist, provide recommendations to meet our needs. All infrastructures proposed should be consistent and compatible with COW desktop workstation and server standards as noted in Appendix F. Any exceptions to the COW standards should be clearly noted in your response. The inclusion of tables, diagrams and other visual models to describe the specifications is encouraged. Provide recommended specifications for two (2) independent environments – Production and Non-Production (Dev / Test) - addressing the operating locations, anticipated work load and maintenance environments listed in the sub-sections below.

*Include any additional information regarding infrastructure requirements that may be of interest to the City of Winnipeg.* | E6.1(b) |  |
| 1. Locations: The *Production* infrastructure should be capable of operating independently within each PCC (plant), with or without network connectivity with the entire COW enterprise. Under normal operating conditions, the solution should be available from all network connected workstations within the WWD.
 | E6.1(b)(i) |  |
| 1. Operational work load: The *Production* infrastructure should be adequately sized to address concurrent user metrics, as detailed in Appendix A.
 | E6.1(b)(ii) |  |
| 1. Support Environment: The solution should include a *Non-Production* environment, which is isolated from the main *Production* environment infrastructure.
 | E6.1(b)(iii) |  |
| 1. Other dependencies: Provide a list of any and all hardware and/or software components that are NOT included in your proposal, but will be required by the COW to efficiently operate *Production* and *Non-Production* environments (e.g. Database Backup solution, Enterprise Job Scheduler, etc.).
 | E6.1(b)(iv) |  |
| *<Infrastructure Requirements Proponent response>* |
| 1. **System Management:** Describe the system management activities and processes required to operate and maintain the vitality of your proposed solution over time.

*Include any additional information regarding system management that may be of interest to the City of Winnipeg.* | E6.1(c) |  |
| 1. Active Directory: The solution should integrate with the City of Winnipeg’s Corporate User Directory (MS Windows Server 2012 Active Directory) for authenticating users.
 | E6.1(c)(i) |  |
| 1. Access: The solution should provide the ability to define and control user access to functions and datasets through combination of role-based and group-based authorization controls. Describe the features and capabilities used to control access (granted/denied) and user profile and session management.
 | E6.1(c)(ii) |  |
| *<System Management Proponent response>* |
| 1. **Performance:** Describe the expected performance of your solution for common functional activities. Performance metrics should be relative to normal operating conditions (see Appendix A regarding user loads) and based on the infrastructure recommendations provided in your response.

*Include any additional information regarding performance that may be of interest to the City of Winnipeg.* | E6.1(d) |  |
| 1. Startup Performance: Provide typical metrics for user login and invoking any major functional of major application login, data form initiation. Describe performance expectations for application startup and user login.
 | E6.1(d)(i) |  |
| 1. Standard Tasks Performance: Describe performance expectations for data entry, generating and viewing KPIs, data review and approval, navigating through the solution, generating notifications. Common daily tasks should not take more than one second.
 | E6.1(d)(ii) |  |
| 1. Reporting Performance: Describe performance expectations for standard report generation (standard, pre-defined reports).
 | E6.1(d)(iii) |  |
| 1. Scalability: Describe the capability of your solution to scale to accommodate increased user demands, peak load times, and other high volume usage scenarios. Describe the capability of your solution to scale to accommodate future enhancements.
 | E6.1(d)(iv) |  |
| *<Performance Proponent response>* |
| 1. **Availability:** : Describe the capabilities of your solution to meet the availability requirements noted below.

*Include any additional information regarding availability that may be of interest to the City of Winnipeg.* | E6.1(e) |  |
| 1. Standard Availability Requirements: All functions of the solution should be available for use at the plants 24/7/365, excluding scheduled outages.
 | E6.1(e)(i) |  |
| *<Availability Proponent response>* |
| 1. **Support:** Describe the support and maintenance services you plan to offer post-implementation, including Service Level Agreements (SLAs) that align with the pricing in Form B. Be specific and include all options for support levels/methods, and time of availability. Include delineation between tasks for which the City of Winnipeg will be responsible vs. those that your support services will provide.

*Include any additional information regarding support that may be of interest to the City of Winnipeg.* | E6.1(f) |  |
| 1. Support types: Describe the types of Business and/or Technical support typically offered to and used by your customers. Include any limitations, restrictions, or constraints for accessing your support services.
 | E6.1(f)(i) |  |
| 1. Incident Management and Escalation: Describe your customer facing and internal processes for managing incidents, including issue classification and escalation approach.
 | E6.1(f)(ii) |  |
| *<Support Proponent response>* |
| 1. **Usability:** Describe how your solution is designed to be user-friendly and intuitive. Include a robust description of the global design features within the solution that assist and guide the user through an aesthetically appealing experience when performing routine tasks. The City of Winnipeg describes usability as the capability of the software to be understood, learned, used, and attractive to the user. In your response, please consider the points below.

*Include any additional information regarding usability that may be of interest to the City of Winnipeg.* | E6.1(g) |  |
| 1. Understandability: The solution should demonstrate the following characteristics: Descriptions and demonstrations are available to solution users. Guides and context sensitive messages are displayed to solution users.
 | E6.1(g)(i) |  |
| 1. Learnability: The solution should demonstrate the following characteristics: Functions can be absorbed quickly. Functions and flows within the solution are intuitive and require actions that are discreetly defined and apparent.
 | E6.1(g)(ii) |  |
| 1. Operability: The solution should demonstrate the following characteristics: There is consistency across functions and screens. Common data elements can be selected rather than entered. Colour coding and conditional formatting is used to indicate status/state of a system artifact or data element. Icons and images are used, where beneficial to the user experience. Data visualization techniques are applied, to facilitate understanding of presented data. Navigation through the solution functions is clear and can be effectively done without a mouse when applicable. Self-explanatory messages that clearly indicate resolutions are present where appropriate. The ability to undo actions is provided where appropriate.
 | E6.1(g)(iii) |  |
| 1. Attractiveness: The solution should demonstrate the following characteristics: Screen layouts are aesthetically pleasing. Styles, colors and fonts are used consistency throughout the application. The application has a modern look and feel when using solution functions.
 | E6.1(g)(iv) |  |
| *<Usability Proponent response>* |