Republic of Serbia

Republic Geodetic Authority (RGA)

Real Estate Management Project

Terms of Reference

for

Consultant Services – Company

Quality Review of Integrated System of Real Estate Cadastre Implementation (with Special Reference to Phase 3)

Contents

I. Background

The Republic of Serbia and the International Bank for Reconstruction and Development (Hereinafter: IBRD) concluded the Loan Agreement (Hereinafter: LA) for the Real Estate Management Project in Serbia (Hereinafter: The Project), signed by the two parties on April 17th, 2015 and ratified by the Parliament of the Republic of Serbia in its session on Jun 24, 2015 (Official Gazette of the Republic of Serbia – International contracts, No. 13-15).

The Law on State Surveys and Cadaster (LSSC, 2009) with appropriate amendments provides a solid foundation for the project. A viable single agency, the Serbian Republic Geodetic Authority (RGA/ Client), is implementing the LSSC. A Project Council and Project Steering Committee are supervising the Project Implementation.

The Project consists of four components: (A) Valuation and Property Taxation; (B) E-governance for Enabling Access to Real Estate Information; (C) Institutional Development of the RGA; and (D) Project Management and Support Activities.

The objective of the Project is to improve the efficiency, transparency, accessibility and reliability of the Republic of Serbia's real property management systems.

A full description of the Project is provided in the document "Project Appraisal Document" (PAD) and Loan Agreement (LA). The PAD is considered as a part of the necessary background materials to be understood by Consultants.

Implementation is entrusted to the Project Implementation Unit (Hereinafter: PIU) of the Republic Geodetic Authority.

The Information System for Real Estate Cadastre (ISREC) is being developed under the Project's Component B, through multiple phases, namely:

DMS (ISREC Phase 1)

Implementation of the RGA DMS system on Therefore DMS platform is the first phase of the ISREC system, which had established a centralized electronic system for recording and managing documents, processes, users and code lists, impacting the improvement of work efficiency and effectiveness, while establishing the foundations for improvement and setting up of the entire electronic system for the RGA – the ISREC.

DQI (Data Quality Improvement)

The Data Quality Improvement is the process that will entail data checks and correction of errors, followed by verification of data quality and consistency.

Address Register and Administrative Units (ISREC Phase 2)

The purpose of the address module is to manage all types of addresses in Serbia in a unified, centralized system, and to distribute up to date address information to the other information systems in Serbia.

The administrative units' module is a centralized system for managing the information on types, boundaries, names, official ID's, hierarchy and other data pertaining to the administrative units in Serbia, as well as distributing the current information about administrative units to the other information systems in Serbia.

Real Estate Cadastre Software (ISREC Phase 3)

Development of software for the Real Estate Cadastre (textual and graphical data module and persons' module).

ISREC Phase 4

Refers to: (i) completing ISREC system, namely (1) develop the remaining modules: Utility Cadastre, HR and Financial system modules and integrate them with ISREC, and (2) roll-out the ISREC countrywide; (ii) implementation of NSDI; (iii) implementation of sustainable business model for managing the NSDI and RGA IT systems.

II. Objectives

The main objective of this Quality Review is to review and assess whether the Integrated System of Real Estate Cadastre (ISREC), developed under the "Real Estate Management Project" meets all non-functional requirements, including source code quality, system integration, system performance, security and others.

The firm (hereinafter: Consultant) will serve as a support to the RGA during implementation of the ISREC as well as review of contract management, QAQC aspects (related to the analysis, design, development, and implementation for software solutions), additional review of the business processes, database, source code, performance, etc. (all important aspects of ISREC). Additionally, the consultant must assist the RGA in avoiding pitfalls in project. The consultant will provide warnings and recommendations to the RGA, thereby increasing the chance of success.

The Quality Review is focused at two entireties:

- Project Activities - related to the establishment of a new RGA IS that provides cross-organization integration and is consists of several modules, such as Address Register, Administrative Units, DMS, ERP, BI, Real Estate Cadastre Software, Utility Cadastre, etc.;
- Develop a Requirements tracking matrix for ISREC phase III contract and work with RGA team to identify which of those are met, changed, cancelled, in progress, not met. The consultant will prepare a recommendation for improvement of contracts management and meeting the pending mandatory non-functional requirements with a special attention on the system performance and response time requirements, system roll out (data migration, training and support to end users, improvements of the implementation plan.

The provided support by the consultant to the RGA team is threefold. Support by the consultant are considered because: 1) they are related to all necessary aspects of the ISREC implementation; 2) demonstrate the different ways in which IT Quality Assurance & Control for Phase 3 can be improved; 3) contribute to informing the overall understanding of the possibilities of the project extension (time and financial framework).

III. Scope of work and tasks

When not physically present at RGA premises, the consultant must be available for communication via email, chat or phone, during the working hours within the contract duration.

The consultant will review major documents (with a key focus on ISREC Phase III contract and its requirements for system integration), the list of main documents to be reviewed can be found in Annex 1.

Consultant will perform following tasks:

1. Review the solution architecture (ISREC).
2. Review the ISREC specification and design documents and prepare a requirements tracking matrix and work with RGZ team to identify the status of each of the mandatory requirements with a focus on the non-functional requirements. For each of the mandatory requirements, which have not been met, a recommendation should be provided with time estimation.
   a. For any recommendation, which are in addition to the contract requirements, the consultant has to provide time and cost estimation.
3. Review of migration related aspects; review data and database aspects related to performance (ISREC Phase III).

a. Data migration regarding parcels that are stored in Land cadastre and implementation software support for basic functions for managing parcels from Land cadastre in new ISREC system.

4. Review of roll-out related aspects (ISREC Phase III) and recommend improvements.

5. Review of current end-to-end business process (ISREC Phase I and Phase III)
    a. Issues regarding DMS, those through which DMS has be modified to enable work of the alphanumerical and graphical system (DMS support processes in the cadastral system).

6. Review integrate DMS services (for example: data exchange with external and internal IS, creating reports in ISREC, etc.).

7. Prepare a plan for ISREC Phase III Performance testing. This Plan must to be done together with the RGA, ISREC supplier, Hardware, licences, communication lines suppliers and the QA expert.
    a. Participate in the testing, draft technical report with recommendations.

IV. Deliverables and Expected Outcomes

The Consultant shall prepare and deliver the following reports as part of the outputs at the designated stages of the assignment:

- **Quality Review of ISREC** - on the deliverables, resulting from the recommendations for solving system performance, complete source code quality review with recommendations for improvement, review of the data migration related aspects (both data and ongoing cases), data validation and ISREC Phase III national rollout plan review.

- **Mission reports –** details of activities (formal/ad hoc meetings, contact persons, reporting, testing, etc.) and special technical topics & insight in the context of General Review and Final Report.

- **Recommendations for improvement** - in relation to the observed situation, the recommendations should refer to both software solutions and business processes and recommendations for improvement of the RGA contract management. As well as, system performance, system integration (Phase I with Phase III Phase III and other modules) and basic ISREC data available to NSDI and other external systems as services.

- **Final report** - this report will describe the Consultants activities, achievements, and recommendations for future activities. It is especially relevant to: Technical quality audit of the source code, software architecture and requirements for system integration of the ISREC system Phase III; Technical quality audit of the ability of DMS (ISREC system Phase I) to provide and receive services from other systems (especially ISREC Phase III) and to use the services to interchange information; Review of national roll-out related aspects (ISREC Phase III) and recommendation for future improvements and Plan for ISREC Phase III Performance testing.

Reports should be addressed to the appropriate management for necessary action. A final report listing all issues raised during the review can be issued.

Review of Final report will be completed within two weeks from delivery date.

All materials and reports provided to the Consultant (subject to his review) will be (translated) in English. All materials and reports produced by the Consultant under this contract shall be made available to the RGA in English. The RGA will provide translation services during the meetings.

No	Task	Start date	Duration	Finish	Acceptance
1.	Document review and mission 1 preparation (Home based)	May 20	6 DAYS	May 27	
2.	Mission 1	May 30	2 WEEKS	June 10	
3.	Document review, mission 2 preparation and reporting (Home based). General Review 1; Recommendations for improvement and Mission report delivery.	June 10	1 DAY	June 10	June 16
4.	Mission 2	September 19	1 WEEK	September 23	
5.	Document review, mission 3 preparation and reporting (Home based). General Review2; Recommendations for improvement and Mission report delivery.	September 26	1 DAY	September 26	September 30
6.	Mission 3	October 10	1 WEEK	October 14	
7.	Document review and reporting (Home based). General Review 3; Mission report delivery and Final Report delivery, review and revision.	October 17	2 DAYS	October 18	October 31

Table 1 - Outputs and reporting

The Consultant will deliver a **General Review 1, Recommendations for improvement and Mission report** in the week after the first mission. The RGA will provide comments and/or accept the review and report within 5 days of delivery.

General Review 1 contain:

- Review the solution architecture (ISREC).
- ISREC Phase III contract Requirements Tracking Matrix with the status of each of the contract requirements.
- Review of migration related aspects; review data and database aspects related to performance (ISREC Phase III).
- Technical quality audit of the ability of DMS (ISREC system Phase I) to provide and receive services from other systems (especially ISREC Phase III) and to use the services to interchange information.
- ISREC Phase 3 Performance testing report (done together with the RGA, ISREC supplier, Hardware, licenses, communication lines suppliers) with requirements for the next steps with time estimation.
- ISREC Phase III Source Code technical quality review report.

Note: Any recommendations, which are not part of the contract requirements should include time and cost estimation.

General Review 2 contain:

- Review of submitted recommendations for improvement (done compared to the proposed).

- Technical Report with recommendations for improvement of the RGA contract management.
- Plan for meeting the pending mandatory requirements with time estimation.
- Recommendations for improvement system performance, system integration (Phase I with Phase III) and basic ISREC data (available to NSDI and other external systems as services).

Note: Any recommendations, which are not part of the contract requirements should include time and cost estimation.

The **General Review 2, Recommendations for improvement and Mission report** will be delivered in the week after the second mission.

The RGA will provide comments and/or accept the review and mission report within 5 days from delivery.

General Review 3 contain:

- Review of submitted recommendations for improvement (done compared to the proposed).
- Recommendations for improvement of the national roll-out plan.

Note: Any recommendations, which are not part of the contract requirements should include time and cost estimation.

The **General Review 3, Mission report and Finale report** will be delivered in the week after the third mission.

The RGA will provide comments and/or accept the review and mission report within 10 days from delivery.

The Final Report will summarize all activities undertaken during the missions. It will additionally present achievements and recommendations for future activities. In addition, it should contain what has not been done in relation to the submitted proposals of the Consultant (findings for previous missions).

V. Period of Performance

Assignment duration is 6 months with 30 working days (covers 3 missions and home days for document review, mission preparation and reporting). The duration of the assignment may be renewable subject to satisfactory performance of the consultant and future requirements of RGA.

The assignment is expected to start in mid-May.

A Consultant will be selected in accordance with the selection method: A Consultant will be selected in accordance with the CQS procedure set out in the World Bank's "*Procurement Regulations for IPF Borrowers" (July 2016, Revised November 2017, August 2018 and November 2020)*.

VI. Missions

Based on current needs of RGA, we envision the following missions:

- 1 mission - The main task is to resolve the system performance, complete source code quality review and recommendations for improvement, etc.
- 2 Subsequent missions – The main task is to review the data migration, data validation and roll out plan and suggestions for improvements, etc.

VII. Qualifications of the Consultant

10 years of international experience (proved by company references) in ICT consulting services in carrying out technical quality audits on multi-agency information systems including:

› ISO20000 or equivalent certification
› ISO19152 or equivalent certification
› System analysis using automated tools
› Software architecture analysis
› Application performance testing

The Consultant should demonstrate proven experience in quality control, performed during the last 3 years, where the system has similar complexity and size.

In addition to the ICT project management skills, the Consultant should have experience with international cooperation projects, with emphasise on the understanding of the quality standards, monitoring and reporting.

Previous experience with QA/QC of Cadaster and property registration systems as an advantage.

The Consultant must provide an expert that covers the following requirements:

	The IT Quality Assurance & Control Expert
M	Bachelor's degree in Computer Science, Information System or related field.
M	Minimum 15 years of years of international experience with the design, development, test processes, and deployment of (geo-spatial) information system development.
M	Minimum 5 years of software quality assurance/testing experience of increasing complexity with the planning, organization, and control of Software Quality Procedures for complex information system development projects and experience in developing software and associated documents.
M	Minimum 15 years' experience in reviewing and analysing the system design, development and implementation especially for GIS, Land Registration and Cadastre.
M	Solid experience with testing modern-based applications in an informal to semi-formal testing environment.
M	Solid experience with Quality Assurance methods, standards, and tools.
M	Familiarity with the underlying architecture of a modern-based application for Land Registration and Cadastre is required.
D	At least one accomplished project for Cadaster and property registration systems in the area of IT Quality assurance, IT planning or IT strategy.
D	Must be resourceful enough to apply testing methodologies even when a formal specification is not available.
D	Experience in using defect tracking and test management tools.
D	Understanding of the information system development life cycle processes, and sufficient knowledge of the application of various information system development methods (e.g. waterfall, iterative).
D	Solid troubleshooting and analysis skills with attention to detail and quality.
D	Excellent knowledge in the English language.
D	Ability to work independently as well as a member of a team.

Table 2 - Company requirements

M = Mandatory; D = Desirable

Annex 1 - The list of major documents to be reviewed

1. ICB-TS-16-048 Software Development Phase I and roll out - from 154 to 420 pages

   a. ICB-TS-16-048 - CONTRACT - Amendment#1 - from 02 to 05 pages

   b. Amendment 2 - from 02 to 05 pages

   c. Amendment 3 revised - from 02 to 07 pages

   d. Amendment 4 revised - from 02 to 08 pages

2. NCB-TS-19-139 –SBD-Improvement and maintenance of the information system ISREC Phase I - from 142 to 164 pages

3. NCB-TS-20-177_Improvement and maintenance of the information system ISREC Phase I for 2021 - from 140 to 166 pages

4. ICB-TS-17-090 Software Development Phase III - from 136 to 364 pages

5. Amendment 1 ICB-TS-17-090 Phase_III - from 15 to 60 pages

6. Amendment 2 ICB-TS-17-090 Phase_III - from 04 to 28 pages

7. ICB-TS-17-090 Amendment 3 - from 04 to 31 pages

8. Amendment 4 ICB-TS-17-090 Phase_III v2.1 - from 12 to 22 pages

9. Project Plan ISREC Ohase III

10. ISREC ICT – Architecture Principles Norge Project 2015 - from 03 to 13 pages

11. ISREC ICT – Requirements Norge Project 2015 - from 12 to 37 pages; from 38 to 60 pages; from 219 to 226 pages

12. TECHNICAL QUALITY AUDIT REPORT ISREC Phase I DMS - from 06 to 17 pages; from 79 to 89 pages; from 119 to 158 pages and page 173

13. ISREC Phase III Amendment#1 Audit_December 2020_v1.0_EN - from 03 to 09 pages

14. ISREC Phase III Audit_May 2020_v1.0_EN - from 07 to 38 pages