SMART EPC

Next generation of energy performance contracting

STANDARDISED SMART EPC CONTRACT AND TENDER DOCUMENTATION

SMART EPC

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101031639

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- Call: H2020-LC-SC3-EE-2020-2
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- Enabling next-generation of smart energy services valorising energy efficiency and flexibility at demand-side
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Next generation of energy performance contracting – Smart EPC

The main objective of Smart EPC project is to enable transition of local public authorities towards smart sustainable cities of the future by utilizing existing energy efficiency services as a key for unlocking potentials of new, emerging technologies and services. By creating advanced and smart concepts for modernization of public lighting in European cities, Smart EPC project will enable large-scale energy efficiency programs while strengthening the know-how of regional/national key stakeholders.

Disclaimer

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Introduction

Standardised Smart EPC contract and tender documentation

The successful preparation and execution of Energy Performance Contracting (EPC) projects require the expertise and experience of project leaders representing the local authority or client. As technology and innovations in energy efficiency continue to progress, it becomes imperative to engage consultants and experts well-versed in the latest developments in the field of building and public lighting. These specialists play a crucial role in project preparation, implementation, and procurement procedures related to energy services. A key aspect of these projects is to ensure that the technical specifications, procurement conditions, contract proposals, and required guarantees do not exclude competent private companies capable of effectively executing the project. Additionally, it is vital to safeguard the local authority from unanticipated risks that may arise during the project while ensuring the delivery of high-quality solutions and equipment. This approach promotes an open procurement procedure that encourages interested entities to offer innovative solutions, thereby maximizing the value for taxpayers' money and achieving the project's objectives efficiently through public procurement.

When incorporating additional energy and non-energy related services into the SMART EPC approach, the complexity of standard EPC projects is further highlighted. These projects involve the realization of various types of investments under a single contract, posing challenges in accounting, financing, and legal aspects. To address these complexities and assist cities in developing such projects, the SMART EPC project has developed standardized SMART EPC contract and tender documentation. This documentation provides a comprehensive draft of the contract and its annexes, which can be easily adapted to suit the unique requirements of each client.

The SMART EPC contract documentation is built upon the foundation of standard EPC contract documentation, with a focus on energy performance and guaranteed energy savings as the core subjects. The additional energy and non-energy services are categorized as either commercial or non-commercial services. The former can be financed by charging for the services to third parties or the general public on a commercial basis. In contrast, the latter may not be feasible through commercial financing and are usually included within the contract. These distinctions result in different types of investments for the client, with non-commercial investments considered as "on balance sheet" and commercial ones often treated as "off balance sheet."

To ensure clarity and fairness in the tendering process, the SMART EPC contract documentation specifies a fee or revenue that service providers must pay for the right to use public lighting infrastructure to provide commercial services to the public. This fixed fee can be easily quantified in the tender documentation, although clients have the option to consider variable fees based on a percentage of total revenue from commercial services. Decisions regarding these approaches are typically made after thorough workshops with potential service providers before the official tender launch.

The standardised SMART EPC contract documentation encompasses various annexes that provide detailed information essential for project implementation. These include:

- **SMART EPC Contract Draft**: Outlining the general provisions of the SMART EPC contract.

- **Annex 1: Project Scope**: Describing the Contracting Entity's overall public lighting system, including information on lighting classes, elements of the system, and the proposed Measures for improving energy efficiency. –(empty template – users need to specify their project scope)
- **Annex 2: Public Lighting System Reference Condition:** Presenting reference data for the public lighting system before implementing energy efficiency Measures, enabling the identification of energy and cost savings. (empty template – users need to specify their reference data)
- **Annex 3: Technical Requirements**: Defining the technical standards for implementing energy efficiency Measures and additional energy and non-energy services, divided into different phases of contract execution (*ICT_SMART EPC_Concept draft_output specification*) .
- **Annex 4: Monitoring, Measurement, and Verification Plan:** Detailing the plan for monitoring, measuring, and verifying energy savings, along with fee adjustment procedures and specifications for measuring devices.
- **Annex 5: Content of the Report, Agreement, and Records:** Providing templates for reports, agreements, and records for specific phases of the contract's duration.
- **Annex 6: Tender:** Including the Tenderer's tender, which becomes part of the contract upon selection. (empty – to be included upon selection of winning tender)
- **Annex 7: Investment Value:** Comprising tables integral to the tendering documentation, including the Investment Value, Structure of Financing, and Amortization Plan. (empty predefined excel table for tenderers to fill)
- **Annex 8: Payment Plan and Savings Plan:** Presenting an excel table for tenderers to fulfill, including the Reference Condition, Input Data, Fee Payment Plan, and Savings Plan. (empty predefined excel table for tenderers to fill)
- **Annex 9: Plan of Implementation:** Defined in the Tenderer's (Provider's) Tender, outlining the execution of Measures for improving energy efficiency. (empty – to be included upon selection of winning tender)

In addition to the standardized draft of SMART EPC contract documentation, the project has also developed standardized SMART EPC tender documentation. This draft serves as a guideline document for clients when preparing official tender documentation, offering insights on how to specify certain requirements and considerations to be mindful of while doing so. The standardized tender documentation needs adaptation to comply with specific national legal frameworks and project requirements.

(Contracting Entity)

EPC Tender documentation - Template

This document represents a standardised formatted template of tender documentation. Clients need to adopt it to fit their own needs as well as nation legal framework and in accordance with national Public procurement acts. This document can be used as guideline to clients with included Notes and Examples to help guide clients through potential issues while prescribing certain requirements.

Download editable EPC tender documentation template here.

TENDER DOCUMENTATION
DRAFT

Object of the procurement:

PROCUREMENT OF ENERGY AND NON ENERGY SERVICES IN: _____

OPEN PUBLIC PROCUREMENT PROCEDURE

NOTE:
There are a number of public procurement procedures that can be used to procure SMART EPC services and it is up to Contracting Entity to decide which one fits the best for their project.
In general, if project scope and details of the service are clear and there are a number of potential service providers that have experience with providing necessary services, open procedure would most probably be the optimum procurement procedure.
If preparing a bid is costly and complex and if there are specific requirements regarding service providers expertise and experience, then restricted procedure could be the optimal procurement model.
Competitive dialogue represents the most complex public procurement procedure which is to be used for procurement of services in cases where Contracting Entity doesn't know all elements of technical or financial requirements and is inviting service providers to propose different technical or financial solutions.

PROCUREMENT REFERENCE NUMBER: _____

1. GENERAL

1.1. NAME AND HEAD OFFICE OF THE CONTRACTING ENTITY, TAXPAYER ID (OIB), TELEFAX, WEB PAGE, E-MAIL AND CONTACT SERVICE

The _____ is the Contracting Entity, address: _____, taxpayer ID: _____, telephone: _____, web address: ____, e mail address:_____.
Communication and every other exchange of information regarding Questions/Clarification of the Procurement Documentation between the Contracting Entity and business subjects may only be conducted in _____ and exclusively **via _____**.
The competent office for contact is:_____, which can be accessed via e-mail: _____-.

> NOTE:
> Contracting Entity needs to specify the details on official communications during the tendering phase in order to ensure full transparency. Communication outside official procedures is forbidden and all answers and explanations to all questions from interested potential bidders should be communicated and made public to all other potential bidders during tendering stage.

1.2. LIST OF BUSINESS ENTITIES INVOLVED IN A CONFLICT OF INTEREST WITH THE CONTRACTING ENTITY OR A STATEMENT THAT SUCH BUSINESS ENTITIES DO NOT EXIST AT THE MOMENT OF PUBLICATION OF PUBLIC PROCUREMENT DOCUMENTATION

There are no business entities that the Contracting Entity cannot conclude a public procurement contract with.

> NOTE:
> There are a number of public procurement procedures that can be used to procure SMART EPC services and it is up to Contracting Entity to decide which one fits the best for their project.
> In general, if project scope and details of the service are clear and there are a number of potential service providers that have experience with providing necessary services, open procedure would most probably be the optimum procurement procedure.
> If preparing a bid is costly and complex and if there are specific requirements regarding service providers expertise and experience, then restricted procedure could be the optimal procurement model.
> Competitive dialogue represents the most complex public procurement procedure which is to be used for procurement of services in cases where Contracting Entity doesn't know all elements of technical or financial requirements and is inviting service providers to propose different technical or financial solutions.

1.3. TYPE OF PUBLIC PROCUREMENT PROCEDURE

_____ (depends on selected procurement method) public procurement procedure.

1.4. ESTIMATED VALUE OF PROCUREMENT

The estimated value of procurement is: _____ (VAT not included).

The estimated value includes the sum of all monthly Fees for the provided energy and non-energy services during the contract term, i.e. during the _____ months of providing the energy and non-energy services during the Use Phase, all in accordance with the contract draft and its annexes.

The definitions of terms are provided in the TERM DEFINITION section included in the contract draft which is a constituent part of the procurement documentation.

NOTE:
Contracting Entity will prior to official announcement of public tender calculate expected market price for services to be procured having in mind all obligations that service provider needs to fulfil according to Contract draft. This includes, cost of design and development of Management and Control centre, developing design documentation for implementation of energy efficiency measures and additional energy and non-energy services, equipment procurement, implementation of all needed works and installations as well as cost of financing whole project including indirect costs of service provider during whole contract period etc.

1.5. TYPE OF PUBLIC PROCUREMENT CONTRACT

Public service contract.

1.6. PUBLIC SERVICE CONTRACT OR FRAMEWORK AGREEMENT

A Public procurement contract is concluded.

1.7. DYNAMIC PROCUREMENT SYSTEM

A dynamic procurement system is not established.

1.8. ELECTRONIC AUCTION

An electronic auction is not conducted.

1.9. WEB PAGE WHERE A REPORT REGARDING THE CONDUCTED CONSULTATION WITH INTERESTED BUSINESS ENTITIES SHALL BE PUBLISHED

The report regarding the conducted consultation with interested business entities can be found at:_____, published on _____202_ and finished on _____202_.
The report did not include any comments or proposals.
Or:
The report included comments and proposals and a report on the accepted and unaccepted comments and proposals.

NOTE:
Before initialising the official procurement procedure for the project, the official public consultation with interested parties needs to be provided. In this procedure, Contracting Entity opens public consultations on procurement procedure by sharing its draft of contract documentation and procurement documentation where it specifies the scope and nature of the services, minimal technical and financial requirements as well as all other specifics on the procurement it self should be presented so that all interested parties and providers can comment on it and send their requests or proposals for change of certain parts.
This way Contracting Entity deals with possible issues prior to the official start of the procurement and mitigates risks regarding possible complaints. This procedure gives opportunity to communicate procurements specifics with stakeholders on the market in public and transparent way.

2. INFORMATION ON THE SUBJECT OF THE PROCUREMENT

2.1. DESCRIPTION OF THE SUBJECT-MATTER OF THE PROCUREMENT

NOTE:
In this section of tender documentation, a detailed description of project scope and required services needs to provided. It needs to be clear to all potential service providers what are the services that Contracting Entity is procuring, what are the restrictions, what are the minimal technical requirements etc. This information should provide an introduction to the project, purpose of the project as well as a set of goals project needs to achieve.
It is recommended that description of the project contains information and details on different phases of the project, deadlines that need to be achieved, scope of the work that needs to be done as well as information on structure and contents of contract draft and annexes of the contract draft so that potential providers can easily navigate through complete procurement documentation which should always include contract draft with all annexes.

EXAMPLE:

The subject of procurement is the procurement of energy and non-energy services by implementing Measures for improving energy efficiency of the Public Lighting System and implementation of additional non energy services in _____.

The Contracting Entity conducts an open public procurement procedure in order to contract the provision of energy and non-energy services by implementing Measures for improving energy efficiency of the Public Lighting System and implementation of additional non energy services in _____ in accordance with the means, conditions and terms foreseen by the Procurement Documentation and its annexes.
Subject of this tender and Contract draft is the provision of the Energy service and additional non-energy services (implementation of the energy efficiency project and other related activities) by implementing the Measures for improving energy efficiency of the Public Lighting System of the …… and implementation of additional non-energy services including the financing, Management & Control Centre implementation phase, Measures for improving energy efficiency and additional non-energy services designing phase, reconstruction and/or modernisation phase, Use phase, monitoring, measurement and verification, as well as the guaranteeing of the full functionality of the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services in line with all standards and requirements set out Contract draft and all its annexes, applicable regulations and subordinate legislation, this Tender and professional standards during the whole term of the Contract.
Energy service means the implementation of the energy efficiency project and other related activities based on the energy performance contract with a guarantee that in the reference conditions, it leads to a verifiable and measurable or estimable improvement of energy efficiency and/or energy savings.
Energy performance contract is a contract between the user and provider of energy services, verified and monitored during its whole term, in which the investments into works, equipment and services for the implementation of measures for improving energy efficiency covered by the energy service is repaid according to the contracted level of energy efficiency improvement or other contracted criteria, such as financial savings;
Provider of the energy service is a natural or legal person providing the energy service or other measures for improving the energy efficiency of buildings or infrastructure in the property of the energy service users or in its use under other legal grounds

The purpose of the subject of procurement (procurement subject) is the reduction of the installed power of the Public Lighting System, reduction of energy consumption, reduction of greenhouse gas emissions, limitation of light pollution, and the improvement and guaranteeing of the minimum and maximum level of illumination of public areas in accordance with the regulations in force (as defined by the provisions of chapter 1 of the Contract draft).

Additional purpose of contract draft is to provide additional non-energy efficiency services to Contracting Entity and to third parties on commercial and non-commercial basis (public services) By Contract draft (on the grounds of this public procurement procedure), the chosen tenderer (service provider) uses its skills and innovation in order to provide the Contracting Entity with an energy service by implementing and applying the Measures for improving energy efficiency of the Public Lighting System in a cost-efficient manner, simultaneously maintaining or increasing the current public lighting service and standard quality.

The subject of procurement includes:

1. **Period of implementation of the Management and Control Centre (MCC implementation Phase)**, all in accordance with chapter 7 of the Contract draft which is a constituent part of this Procurement documentation,
2. **Designing phase** in accordance with chapter 8 of the Contract draft which is a constituent part of the Procurement documentation,
3. **Reconstruction and/or modernisation phase** in accordance with chapter 9 and 10 of the Contract draft which is a constituent part of the Procurement documentation,
4. **Use phase** in accordance with chapter 11 of the Contract draft which is a constituent part of this Procurement documentation.

The chosen tenderer (service provider) shall fully finance all necessary works and activities within the Project and the procurement of all necessary materials and equipment in order to fulfill all obligations prescribed by the Contract draft, in accordance with chapter 4 of the Contract draf which is a constituent part of the tender documentation.
Contract draft which is a constituent part of this tender documentation contains 9 annexes in the following way:

Annex 1 Project Scope
(Label: 2_Contract_EPC_Annex_1_Project_scope,
The description of the Contracting Entity's public lighting system, which is the object of this Contract draft i.e. information on the elements of the public lighting system to which the Measures for improving energy efficiency and the Illumination classification of roads and public areas are to be applied. Also, project scope includes details on scope of additional energy and non-energy services.

Annex 2 Public Lighting System Reference Condition
(Label: 3_Contract_EPC_Annex_2_Reference_conditions
Includes reference data (installed active power, consumption, costs and the reference number of operating hours) for the public lighting system before applying the Measures for improving energy efficiency of the public lighting system in order to make it possible to identify the reference energy and cost savings in a verifiable and measurable way. Also, it includes technical details on points of planed instalment of equipment for provision of additional energy and non-energy services.

Annex 3 Technical Requirements
(Label: 4_Contract_EPC_Annex_3_Technical_Requirements)
Defines the technical requirements and the standards that the implementation of Measures for improving energy efficiency of the public lighting system and implementation of additional

energy and non-energy services should meet. The annex is divided into four key parts according to the specific requirements in each phase (period) of the Contract execution: PART A – Minimum technical requirements and standards of service that have to be maintained in every phase of the duration of the Contract; PART B – Requirements during the phase of implementation of the MCC and the designing phase; PART C – Requirements during the execution phase; PART D – Requirements during the use phase.

Annex 4 Monitoring, Measurement and Verification Plan
(Label: 5_Contract_EPC_Annex_4_M&V_Plan)
M&V Plan which, among other things, defines the responsibilities, dynamics of monitoring, measuring and verification, fee adjustment procedures, specifications for measuring devices for conduction measurements.

Annex 5 Content of the Report, Agreement and Minutes
(Label: 6_Contract_EPC_Annex_5_Content_of_the_Report)
Templates for reports, agreements and minutes in particular phases of duration of the Contract)

Annex 6 Tender
(Label: 7_Contract_EPC_Annex_6_Tender
Tenderer's Offer - only head page of the annex. This annex to the contract shall include the tender of the chosen tenderer.

Annex 7 Investment Value
(Label: 8_Contract_EPC_Annex_7_Investment_value)
Defined in the Tenderer's Tender according to the predefined obligatory forms - it comprises Investment Value, Structure of Financing, Amortisation Plan.

Annex 8 Payment Plan and Savings Plan
(label: 9_Contract_EPC_Annex_8_Payment_plan_and_Savings_plan)
Defined in the Tenderer's Tender according to the predefined obligatory forms – it comprises the predefined Reference Condition filled out by the Contracting Entity, Input Data filled out by the Tenderer, and the Fee Payment Plan and Savings Plan automatically generated according to the input data.

Annex 9 Plan of implementation of the Measures for improving energy efficiency
(Label: 10_Contract_EPC_Annex_9_Plan_of_implementation)
Defined in the Tenderer's Tender.

CPV code:
71314000-2 Services in the area of energy and related services
_____ Services

NOTE: Contracting Entity should include CPVs for all services that planned to be tendered. In most cases there will be more CPVs that reflect procurement subject.

2.2. DESCRIPTION AND LABEL OF THE SUBJECT OF PROCUREMENT AND ELABORATION REGARDING WHY THE SUBJECT OF PROCUREMENT IS NOT DIVIDED INTO GROUPS

The subject of procurement is not divided into groups.
The subject of procurement is not divided into groups because the subject of procurement is considered to be a single functional entity which may not be divided. If subject of procurement is

divided into groups, the functionality of the subject cannot be maintained, i.e. all aspects of the energy service in) would not be presented and enabled.

> NOTE:
> It is not recommended to divide subject of procurement in to different groups since management of public lightning system should be centrally managed. If there are a number of different providers, then there would be a number of different Management & Control Centres developed from different service providers which would raise significant risk on their mutual compliance. Also, there would be a loss of benefits that come with economy of scale (like indirect costs for providers as well as contracting and management cost of authority).

2.3. AMOUNT OF THE PROCUREMENT SUBJECT

The amount of the procurement subject is provided for (framework) and visible from the cost estimate, contract draft with corresponding annexes which are a constituent part of the procurement documentation.

The actual procured amount of the subject can be larger or smaller than the estimated amount of the procurement subject.

> NOTE:
> Since the subject of procurement is procurement of energy and non-energy services, amount of procurement relates to planned number of months that services are to be provided to Contracting Entity.

2.4. TECHNICAL SPECIFICATIONS

The technical specifications determine the required minimum characteristics of the procured services.

The Tenderer offers the Guaranteed normed active power of the Public Lighting System defined in Annex 3 of the Energy Efficiency Contract (Technical requirements). The Guaranteeed normed active power of the Public Lighting System cannot be higher than the Maximum allowed normed active power of the Public Lighting System defined by the Contracting Entity and required in Annex 8 of the Energy Efficiency Contract (Fee Payment Plan and Savings Plan), Reference_data sheet, cell D12.

The Tenderer notes the value of the Guaranteed normed active power of the Public Lighting System in Annex 8 of the Energy Efficiency Contract (Fee Payment Plan and Savings Plan), Input data_Tenderer sheet, cell D8.

If the Tenderer notes the value of the Guaranteed normed active power of the Public Lighting System that exceeds the Maximum allowed normed active power of the Public Lighting System, the Tender shall be dismissed as inadequate on the basis of not meeting the technical specification of the procurement subject. If the Tenderer does not fill out the value of Guaranteed normed active power of the Public Lighting System it shall be considered that the Tendered offered Guaranteed normed active power that is equal to the Maximum allowed normed active power of the Public Lighting System (stated by the Contracting Entity and required in Annex 8 of the Energy Efficiency Contract (Fee Payment Plan and Savings Plan), Reference_data sheet, cell D12.).

The Tenderer also proves the Investment value of the Tender with filled out tables (Annex 7 of the Energy Efficiency Contract) and the Fee Payment Plan and Savings Plan (Annex 8 of the Energy Efficiency Contract) that the offered monthly fee arises from the total fee for providing the services which includes the capital costs of the project, operative costs of the project, all taxes and fees as well as the costs of financing the project and the tenderer's profit, all in accordance with the Contract draft (and that the offered monthly fee for energy saving service is equal to or lower than the savings that the Contracting Entity shall generate regarding the costs electric energy – only in case where this is the case or where this is mandatory requirement of Contracting Entity).

If the tenderer does not fill out the above mentioned tables, i.e. Annex 7 and 8 of the Energy Efficiency Contract it shall be considered that the tenderer did not provide evidence that the monthly fee for the provision of the energy and non-energy services arise from all costs of provision of services in accordance with the Contract draft (and that during the term of the Contract it does not achieve savings equal to or higher than the tender price for energy service – only in case where this is the case or where this is mandatory requirement of Contracting Entity) and that such a tender shall will not be accepted.

Technical specifications can be found in the annex to the procurement documentation in the contract draft and the relevant annexes which are constituent parts of the procurement documentation.

NOTE:
For tender documentation to be transparent and clear, technical specification of services to provided as well as minimal technical requirements regarding equipment to be installed need to be specified in detail and published as a part of tender documentation. This technical requirements are part of Contract draft (as a specific Annex) and as such should be provided as part of this tender documentation.
Since Contracting Entity is procuring provision of number of services which include development of design documentation of measures for energy efficiency as well as design documentation of additional energy and non-energy services, technical specifications must be draft as output specification requirements. This means, that technical specification must not go in to details on how required services are to be provided as well as not go in to details on equipment specifications but instead they must specify only minimum of requirements and constraints in which service provider must find the optimal solutions. This is due to the fact that service provider will guarantee performance of all required services and will be penalised if they do not perform as guaranteed. Since performance risk is completely allocated to service provider he must have freedom to use design solutions and equipment that he is comfortable guaranteeing for.

2.5. CRITERIA TO EVALUATE THE EQUIVALENCE OF THE PROCUREMENT SUBJECT

If the cost estimate or the technical specifications include a supplement "*or equivalent*" or if the economic operator offers an equivalent product, it must list the *manufacturer data* and *type of product* it offers in appropriate places according to appropriate items within the cost estimate or the technical specifications, and if required, other data regarding the product.
Depending on the product, as evidence of equivalence, the economic operator shall deliver evidence regarding the conformity of the offered product with the requirements or criteria established in the cost estimate or the technical specifications (report on the tests by the conformity authority or a certificate by such an authority, i.e. technical documentation from the manufacturer), i.e. the tenderer is obliged to provide appropriate evidence to the Contracting Entity in the tender in accordance with provisions of Public Procurement Act i.e. that the

proposed solutions from economic operator comply with the requirements defined in the technical specifications.
The Contracting Entity shall not dismiss a tender due to the fact that the offered work, goods or services do not meet the defined technical specifications if the tenderer provides evidence for the Contracting Entity within the tender, with any appropriate evidence, including evidence that the proposed solutions comply with the requirements defined in the technical specifications.

If the Procurement documentation includes technical regulations which describe the procurement subject within European, i.e. international norms, the tenderer should offer the procurement subject in accordance with the norms in the procurement documentation or equivalent norms (equivalent solutions). For every norm stated under the relevant norm system it is allowed to offer an equivalent norm (equivalent solution), technical certificate, i.e. instruction from an appropriate European or international terminology.

The Contracting Entity which requires a specific label shall accept every label confirming that the works, goods or services meet the requirements for an equivalent label.

If the economic operator, due to verifiable reasons which are not caused by the entity's actions, was not able to procure the label required by the Contracting Entity or an equivalent one within the prescribed deadline, the Contracting Entity shall accept other appropriate ways of providing evidence, such as the manufacturer's technical documentation, provided that the economic operator proves that the works, goods or services it offers meet the requirements for a specific label or specific requirements listed by the Contracting Entity.

NOTE: Since this tender documentation is for provision of energy and non-energy services where service provider will develop design documentation in tender process, service provider does not specify all equipment and materials that he will use in implementing measures for energy efficiency and implementation of additional energy and non-energy services. Service provider will have to provide criteria for equivalence during design phase of the project and prove to the Contracting authority that all equipment, materials and parts are in accordance with all normatives and certificates that Contracting authority has prescribes in Annex to the Contract draft- Technical requirements.

2.6. COST ESTIMATE

The cost estimate is included in the annex to the procurement documentation.
The economic operator is required to fill out the attached cost estimate - input all unit prices for the items and total prices, as well as the tender price without the value added tax.
If the specific item from the cost estimate shall not be charged by the tenderer, i.e. if the tenderer offers it free of charge or if the item is included in the price of another item, the tenderer shall input "0.00" for that item.
If the tenderer makes changes to the cost estimate from the annex to the procurement documentation (changes the text description, unit of measurement or amount), it shall be considered that the tender is not in accordance with the procurement documentation, i.e. that it is irregular. The Contracting Entity shall dismiss such an offer on the grounds of the results of the review and evaluation.
Along with the filled out Cost estimate, the Contracting Entity requires tables Investment value (Annex 7 to the Energy Efficiency Contract) and in the Fee Payment Plan and Savings Plan (Annex 8 of the Energy Efficiency Contract) to be filled out and delivered as a constituent part of the tender considering that they determine the offered monthly fee, i.e. the tender price. The Contracting Entity requires the tables in the above mentioned annexes to be filled out because they make a constituent part of the Contract. If the tender price in the Cost estimate differs from

the tender price in the Investment value from Annex 7 of the Energy Efficiency Contract) and/or the Fee Payment Plan and Savings Plan (Annex 8 of the Energy Efficiency Contract), the tender price from the Cost estimate shall be evaluated and shall represent the final tender price.

NOTE:
Cost estimate represents more detailed specification of costs that service provider will have during the provision of services according to Contract draft. Final offered price should come from detailed specifications of cost so that calculation of tendered price is clear and transparent.
Cost estimate is crucial part of Contract draft since it constitutes service providers tender price and all calculations of early termination fee, for any specific reason, will be calculated using this initial cost estimate as a starting point. Cost estimate represents project cost breakdown on different categories of cost and divides costs in specific period during duration of contract. Cost estimate does not go in to details on cost of every element, equipment and material but breaks down costs on general categories since this Contract draft and procurement of services is procured similar to "turn key" model where service provider assumes all risks related to costs of providing procured services.

2.7. PLACE OF EXECUTION OF THE CONTRACT

Place of execution of the contract is the: _____.

2.8. THE DEADLINE FOR THE BEGINNING AND END OF CONTRACT EXECUTION

The contracting entities shall conclude a public procurement contract in writing within 30 days from the day of the enforcement of the decision on the selection. The public procurement contract shall be concluded in accordance with the conditions set in the procurement documentation and the selected offer.
The contracting entities shall execute the public procurement contract in accordance with the conditions set in the procurement documentation and the selected offer.
The deadlines for the beginning and ending of the contract execution period are defined in section 2 of the contract draft which is a constituent part of the procurement documentation.
The contract shall be concluded for a period of ____ (_____) years from the day of signing the contract and shall include, among others, periods (phases) of implementation of the Management and Control Centre (MCC), design, reconstruction and/or modernisation and the use of the Public Lighting System and additional energy and non-energy services.

Project phase deadlines

The deadlines for the execution for every specific period (phase) of the Project are stated below:

a) Phase of Management & Control Centre implementation shall take ____(____) months, i.e.:
   a. deadline for the completion of MCC conceptual design is __ (___) months from the Date of signing of the Contract,
   b. the deadline for finishing the Period (phase) of implementation of the MCC is _ (__x) months from the day of signing the contract,
b) the Designing Phase shall take ___ (____) months. The deadline for the completion of the Designing Phase shall be ___ (_____) months from the Date of signing of the Contract;
c) Reconstruction and/or Modernisation Phase shall take _____ (_____) months. The deadline for the completion of Reconstruction and/or Modernisation Phase shall be ____ (_____) months from the Date of signing of the Contract;
d) Use phase is ____ (_____) years, i.e. _____ (_____) months.

The deadline for the completion of the Use phase (period) is ____ (_____) years, i.e. _____ (_____) months from the Day of signing of this Contract;

NOTE:
All deadlines and Contract duration are specified in detail in Contract draft and should also be stated in this part of Tender documentation.

2.9. OPTIONS AND POSSIBLE CONTRACT RENEWALS

The Contracting Entity does not predict options and possible contract renewals.

NOTE:
In general, there is no need for contract renewals. If Contracting Entity decides to procure provision of services for added period of time, after duration of this Contract, then it is recommended to initiate new procurement procedure.

3. EXCLUSION GROUNDS FOR ECONOMIC OPERATORS

3.1. MANDATORY GROUNDS FOR EXCLUSION OF ECONOMIC OPERATORS

NOTE:
This chapter 3.1 of tender documentation represents specification of grounds for exclusion of economic operators (tenderers) that are prescribed by national Public procurement regulation.
Every Contracting Entity should amend this according to mandatory regulations in force.

EXAMPLE:

3.1.1. GROUNDS RELATING TO CRIMINAL CONVICTIONS

The Contracting Entity is obliged to exclude the economic operator at any moment during the public procurement procedure if it is established that:
1 the economic operator has been established in the Republic of _____ or is a person who is a member of a management, governance or supervisory body or has powers of representation, decision-making or supervision of that economic operator, is a citizen of the Republic of _____ and has been the subject of a conviction by final judgement for:

a) participation in a criminal organization, in accordance with Article _____ (criminal association) and Article _____ (committing a crime within the criminal association) of the Criminal Code and Article _____ (association for the purpose of committing crimes) of the Criminal Code (Official Gazette _____)
b) corruption, in accordance with Article ____ (receiving bribe in economic operations), Article _____ (giving bribe in economic operations), Article _____ (abuse in a public procurement procedure), Article _____ (abuse of position and authority), Article _____ (illegal favouring), Article _____ (receiving bribe), Article _____ (giving bribe), Article _____ (influence peddling) and Article _____ (giving bribe for trade in influence) of the Criminal Code and Article _____ (receiving bribe in economic business), Article _____ (giving bribe in economic business), Article _____ (abuse of position and authority), Article _____ (abuse of public duty), Article _____ (illegal intermediation), Article _____ (receiving bribe) and Article _____- (giving bribe) of the Criminal Code (Official Gazette No. _____)
c) fraud, in accordance with Article _____ (fraud), Article _____ (fraud in economic operations), Article _____ (tax or customs duty evasion) and Article ____ (subsidy fraud) of the Criminal Code and Article _____ (fraud), Article_____ (fraud in economic operations) and Article _____ (tax and other duties evasion) of the Criminal Code (Official Gazette No. _____)

d) terrorism and criminal offences related to terrorist activities, based on Article ____ (terrorism), Article ____(public provocation to terrorism), Article ____ (recruitment for terrorism), Article _____(training for terrorism) and Article _____ (terrorist association) of the Criminal Code and Article _____ (terrorism), Article _____ (public incitement to terrorism) and Article _____ (recruitment and training for terrorism) of the Criminal Code (Official Gazette _____)
e) money laundering and the financing of terrorism, based on Article ____ (financing of terrorism) and Article _____ (money laundering) of the Criminal Code and Article _____ (money laundering) of the Criminal Code (Official Gazette _____)
f) child labour and other forms of human trafficking, based on Article _____ (human trafficking) of the Criminal Code and Article _____ (human trafficking and slavery) of the Criminal Code (Official Gazette No. _____)

or

2nd that the economic operator who has not been established in the Republic of _____ or is a person who is a member of a management, governance or supervisory body or has powers of representation, decision-making or supervision of that economic operator, who is not a citizen of the Republic of _____ and has been the subject of a conviction by final judgement for criminal offences referred to in P_____ of the Public Procurement Act and for the analogue criminal offences which, according to the national legislation of the country in which the economic operator has been established, i.e. the country of the person's citizenship, represent exclusion grounds under Article 57, comma 1, points (a) to (f) of the Directive 2014/24/EU.

The economic operator which achieved the grounds for exclusion can deliver to the Contracting Entity the evidence regarding the measures that were taken (_____ of the Public Procurement Act) in order to prove its reliability regardless of there being relevant grounds for exclusion. In which case, the economic operator should fill out the appropriate part of the eESPD form (***Part III. Exclusion grounds, section A: Grounds related to criminal convictions*** - part related to self-correction (if provided for in the eESPD form), as preliminary evidence of the measures taken.

If specific measures were taken in order to prove reliability of the economic operator, the evidence on the taken measures shall be requested as updated additional documents.

The Contracting Entity will not exclude the economic operator from the public procurement procedure if it is estimated that the taken measures are appropriate.

A economic operator that is prohibited by a final court decision to participate in public procurement procedures or concession award procedures for a definite period is not entitled to the options stated in _____ of the Public Procurement Act until the end of the prescribed period in the country where the decision is in force.

The period of exclusion of the economic operator from the public procurement procedure is five years from the day when the judgment is final, unless stated otherwise in the judgment itself.

The above mentioned provisions also relate to subcontractors and entities on whose capacities the economic operator relies on.

If the Contracting Entity determines that there are grounds to exclude the subcontractor, the economic operator shall replace the subcontractor within an appropriate period of time, no sooner than five days. The Contracting Entity shall require from the economic operator to replace the entity on whose ability it relied on in order to prove the selection criteria if it is determined that there are grounds to exclude that entity.

DOCUMENTS PROVING THAT THERE ARE NO GROUNDS FOR EXCLUSION

The economic operator is obliged to deliver within the tender documentation the ***European Single Procurement Document (ESPD) - Part III: Exclusion grounds, section A: Grounds relating to criminal convictions***, for every economic operator participating in the public procurement procedure.

During the public procurement procedure the Contracting Entity can at any time check the information contained in the ESPD form with the authority competent for keeping records containing that data (e.g. criminal records) in accordance with a specific regulation, and can request the issue of related certificate; it can also inspect the accompanying documents or the evidence already made available or accessible free of charge in national database. If it is not possible to conduct a check or acquire a certificate in accordance with this chapter, the Contracting Entity shall ask the tenderer who offered the economically most advantageous offer to deliver additional updated document within a period not longer than 5 (five) days, including:
An extract from criminal records or any other applicable register or, if not possible, an equivalent document issued by competent judicial or administrative authorities in the country where the economic operator has been established, i.e. country of the person's citizenship, proving that there are no exclusion grounds mentioned above.
It is considered that the evidence from Article _____ of the Public Procurement Act is up to date if not older than __ months from the day of opening of the public procurement procedure.
If the country where the economic operator's is established, i.e. the country of the person's citizenship does not issue the above mentioned documents or if they do not comprise all of the above mentioned grounds for exclusion, they can be replaced with a sworn statement, or if the sworn statement in accordance with the law of the said country does not exist, with the issuer's statement with a certified signature by the competent court or administrative authority, notary public or professional or trade authority in the business establishment country, i.e. the country of the person's citizenship.
The statement can be given by a person legally authorised for the representation of the economic operator and of all persons who are members of management, governance or supervisory bodies or have been authorised for representation, decision-making or for the supervision of the economic operator.

3.1.2. GROUNDS RELATING TO THE PAYMENT OF TAXES OR SOCIAL SECURITY CONTRIBUTIONS

The Contracting Entity is obliged to exclude the economic operator from the public procurement procedure if it is established that the economic operator did not meet the obligations to pay due taxes and pension and health insurance:

1. in the Republic of _____, if the economic operator has been established in the Republic of _____, or
2. in the Republic of_____ or in the country where the economic operator has been established, if the economic operator has not been established in the Republic of _____.

The Contracting Entity shall not exclude the economic operator out of the public procurement procedure if, according to a specific regulation, it is not allowed to pay for duties or it has been approved their deferred payment.

The above mentioned provisions also relate to subcontractors and entities on whose capacities the economic operator relies on.
If the Contracting Entity determines that there are grounds to exclude the subcontractor, the economic operator shall replace the subcontractor within an appropriate period of time, no sooner than five days. The Contracting Entity shall require from the economic operator to replace the entity on whose ability it relied on in order to prove the selection criteria if it is determined that there are grounds to exclude that entity.

DOCUMENTS PROVING THAT THERE ARE NO GROUNDS FOR EXCLUSION

The economic operator is obliged to deliver within the tender documentation the ***European Single Procurement Document (ESPD) - Part III: Exclusion grounds, section B: Grounds relating to criminal convictions or social security contributions***, for every economic operator participating in the public procurement procedure.
During the public procurement procedure the Contracting Entity can at any time check the information contained in the ESPD form with the authority competent for keeping records

containing that data (e.g. criminal records) in accordance with a specific regulation, and can request the issue of related certificate; it can also inspect the accompanying documents or the evidence already made available or directly access the free-of-charge national databases if available. If it is not possible to conduct a check or acquire a certificate in accordance with this chapter, the Contracting Entity shall ask the tenderer who offered the economically most advantageous offer to deliver additional updated documents within a period not longer than 5 (five) days, including:

a certificate from the tax administration or other competent authority in the country of the economic operator's establishment which proves that there are no grounds for exclusion mentioned above.

It is considered that the evidence from Article _____ of the Public Procurement Act is up to date if not older from the day of opening of the public procurement procedure.

If the country where the economic operator's is established, i.e. the country of the person's citizenship does not issue the above mentioned documents or if they do not comprise all of the above mentioned grounds for exclusion, they can be replaced with a sworn statement, or if the sworn statement in accordance with the law of the said country does not exist, with the issuer's statement with a certified signature by the competent court or administrative authority, notary public or professional or trade authority in the business establishment country, i.e. the country of the person's citizenship.

3.2. OTHER GROUNDS FOR EXCLUSION OF ECONOMIC OPERATORS

NOTE:
This chapter 3.2 of tender documentation represents specification of grounds for exclusion of economic operators (tenderers) that are optional in accordance with national public procurement act.
Every Contracting Entity should amend this chapter according to best practice in their national context.

EXAMPLE:

The Contracting Entity can exclude the economic operator from the public procurement procedure if:

1. the economic operator displays significant or repeated defects during the implementation of important requirements from the previous contract on public procurement or the previous concession agreement whose consequence was early contract termination, compensation or other similar sanction;
2. the economic operator is responsible for serious wrongful representation of facts while delivering the information necessary to check the lack of grounds for exclusion or meeting criteria to select the economic operator, if such information was hidden or if the economic operator is not able to attach additional documents in accordance with subsection 1, section C of chapter 4 of the Public Procurement Act.

The economic operator which achieved the grounds for exclusion can deliver to the Contracting Entity the evidence regarding the measures that were taken (Article 255, paragraph 2 of the Public Procurement Act) in order to prove its reliability regardless of there being relevant grounds for exclusion. In which case, if applicable, the economic operator should fill out the appropriate part of the eESPD form (***Part III. Exclusion grounds, section C: Grounds related to insolvency, conflicts of interest or business offences (in the section related to the above mentioned exclusion grounds)*** - part related to self-correction (if provided for in the eESPD form), as preliminary evidence regarding the measures taken.

If specific measures were taken in order to prove reliability of the economic operator, the evidence on the taken measures shall be requested as updated additional documents.

The Contracting Entity will not exclude the economic operator from the public procurement procedure if it is estimated that the taken measures are appropriate.

The economic operator that was issued a final judgment to ban the participation in public procurement process for a definite term is not entitled to use this option until the end of the term for the ban in the country where the judgment is in force.

The period of exclusion of the economic operator for which exclusion grounds were established is two years from the day of the event.

The above mentioned provisions also relate to subcontractors and entities on whose capacities the economic operator relies on.

If the Contracting Entity determines that there are grounds to exclude the subcontractor, the economic operator shall replace the subcontractor within an appropriate period of time, no sooner than five days. The Contracting Entity shall require from the economic operator to replace the entity on whose ability it relied on in order to prove the selection criteria if it is determined that there are grounds to exclude that entity.

DOCUMENTS PROVING THAT THERE ARE NO GROUNDS FOR EXCLUSION

The economic operator is obliged to deliver within the tender documentation the ***European Single Procurement Document (ESPD) - Part III: Exclusion grounds, section C: Grounds related to insolvency, conflict of interest or professional misconduct – in the part relative to the aforementioned exclusion grounds***, including:

- EARKY TERMINATION, COMPENSATION OR OTHER COMPARABLE SANCTIONS,

- FALSE REPRESENTATION, CONCEALMENT OF INFORMATION, INABILITY TO SUBMIT THE REQUIRED DOCUMENTS AND COLLECTING CONFIDENTIAL INFORMATION WITHIN THIS PROCEDURE,

for every economic operator participating in the public procurement procedure.

4. CRITERIA FOR SELECTION OF ECONOMIC OPERATOR

NOTE:

This chapter 4. of tender documentation represents a set of minimum criteria for selection of economic operators (tenderers). It relates to minimal requirements on legal, economic/financial and technical capabilities and experience of economic operators (tenderers) that Contracting Entity considers are minimal capabilities that future service provider should have.

Level of minimum legal, economic/financial, and technical capabilities must be carefully prescribed after analysis of market and market consultations have been carried out. Level of minimum requirements should be in relation to subject of procurement and must not exceed minimal levels needed to deliver the project. Also, level of minimum legal, economic/financial, and technical capabilities must not result in limiting market competition in such a way that only few or just one service provider can fulfil them.

When analysing the level of minimum legal, economic/financial and technical capabilities, Contracting Entity should have in mind specific context in which these services are to be provided. In these types of project, service provider is practically “investor” and will provide services during the term of the contract. In most cases, for provision of those services, he will use a number of subcontractors to design project documentation and to carry out works of instalment of equipment and to probably to provide day to day maintenance while service provider will finance all of this and manage provision of services in accordance with

specifications set out in Contract draft. This means that having a selection criteria that focuses on technical capabilities and experience in conducting specific works might not be the best way in achieving the competent and capable economic operators. Focus should be on management and provision of services as well as on financial capabilities of economic operators since they should finance whole project.

4.1. CONDITIONS FOR THE ABILITY TO PERFORM PROFESSIONAL ACTIVITY

EXAMPLE:

4.1.1. REGISTRATION INTO THE COURT, CRAFTS, TRADE OR OTHER APPROPRIATE REGISTER

The economic operator shall prove its enrolment in the court, trade, crafts, professional or other appropriate register in the country of its establishment.

DOCUMENTS PROVING MEETING THE CRITERIA TO SELECT BUSINESS ENTITIES

The economic operator delivers the **filled out eESPD form - Part IV Criteria for selection of business subject, *Section A: Ability to perform professional activity: registration into the trade register or registration into the crafts register.***
During the public procurement procedure the Contracting Entity can at any time check the information contained in the ESPD form with the authority competent for keeping records containing that data (e.g. criminal records) in accordance with a specific regulation, and can request the issue of related certificate; it can also inspect the accompanying documents or the evidence already made available or directly access the free-of-charge national database. If it is not possible to conduct a check or acquire a certificate in accordance with this chapter, the Contracting Entity shall ask the tenderer who offered the economically most advantageous offer to deliver additional updated documents within a period not shorter than 5 (five) days, including: **a certificate issued by a court, trade, crafts or other register in the country of its establishment.**

4.2. CONDITION OF ECONOMIC AND FINANCIAL ABILITY AND THEIR MINIMUM LEVEL

4.2.1. TOTAL ANNUAL TURNOVER

The economic operator shall prove that the amount of annual turnover ("general") in the last three available financial years (depending on the establishment date or the beginning of performing the activity, if the information on the turnover is available) in the amount of _____ EUR (_____).

Rationale:
Considering the value of the project, the estimated necessary participation in the project's funding, the risks related to closing the project's financial construction in the prescribed deadline, risks related to planning, reconstruction and/or modernisation and the use phase, it is the Contracting Entity's estimate that the economic operator which does not meet the prescribed requirements and evidence of capability from this item in the procurement documentation, does not represent the economic operator (tenderers) capable to realize this procurement subject.

NOTE:
Total annual turnover or other economic/financial selection criteria can be selected by Contracting Entity to prescribe minimum level of financial capabilities that economic operators (tenderers) should prove. The purpose of prescribing some kind of economic/financial criteria is to ensure that economic operators (tenderers) have sufficient economic/financial capabilities to finance whole project especially during phase

of modernisation and reconstruction since payment for provided services starts at the end of first months when services are provided.
Due to this fact, future service provider must have sufficient economic and financial capabilities to invest (finance) in to the project and Contracting Entity should decide on appropriate documentation that proves economic operators (tenderers) financial capability. It is recommended that level of financial capability should be in corelation to capital expenses (no greater then) of the project.

DOCUMENTS PROVING MEETING THE CRITERIA TO SELECT BUSINESS ENTITIES

The economic operator delivers the **filled out eESPD form - Part IV Criteria for selection of business subject, *Section B: Economic and financial capacity: item 1a)*, for tenderer and member of economic operator community** and, if applicable, for economic operator on whose ability the economic operator relies on.
During the public procurement procedure the Contracting Entity can at any time check the information contained in the eESPD form with the authority competent for keeping records containing that data (e.g. criminal records) in accordance with a specific regulation, and can request the issue of related certificate; it can also inspect the accompanying documents or the evidence already made available or directly access the free-of-charge national database in _____. If it is not possible to conduct a check or acquire a certificate in accordance with this chapter, the Contracting Entity shall ask the tenderer who offered the economically most advantageous offer to deliver additional updated documents within a period not shorter than 5 (five) days, including:

statement regarding the total turnover of the economic operator in the last three available financial years (depending on the date of establishment or the beginning of performing the activity, if the information on the turnover is available).

Note:

In the event that the economic operator has documents proving the minimum level of capability in the currency that is not EUR, the economic operator shall submit a statement with the amounts in the value of EUR without VAT. If the currency which is the subject of the conversion into EUR, is listed in the foreign exchange market in the Republic of _____, the middle exchange rate of the _____National Bank on the day of the beginning of the public procurement procedure shall be used. The day of the beginning of the public procurement procedure is the day of submitting the contracting notice to the Electronic Public Procurement Classifieds of the Republic of _____. If the currency is not listed in the foreign exchange rate in the Republic of _____, the exchange rate according to the list of calculated exchange rates which are not listed in the foreign exchange market of the Republic of _____ in the month of the beginning of the public procurement procedure shall be used.

4.2.2. OTHER ECONOMIC OR FINANCIAL REQUIREMENTS

NOTE:
Similar to former requirement, economic operators (tenderers) should prove their solvency as a part of financial capabilities.

The economic operator shall prove in the public procurement procedure that it meets the solvency requirement, i.e. that its account has not at all been frozen over the last six months (counting from any day after the beginning (publication) of the public procurement procedure).

DOCUMENTS USED FOR PROVING THAT ECONOMIC OPERATORS MEET THE SELECTION CRITERIA

The economic operator shall deliver the **filled out eESPD form - Part IV Criteria for selection of business subject, *Section B: Economic and financial capacity: item 6)*, for tenderer and member of group of economic opeators** and, if applicable, for economic operator on whose ability the economic operator relies.
During the public procurement procedure the Contracting Entity shall check the information contained in the eESPD form with the authority competent for keeping records containing that data (e.g. criminal records) in accordance with a specific regulation, and can request the issue of the related certificate; it can also inspect the accompanying documents or the evidence already made available or directly access the free-of-charge national database in _____. If it is not possible to conduct a check or acquire a certificate in accordance with this chapter, the Contracting Entity shall ask the tenderer who offered the economically most advantageous offer to deliver additional updated documents within a period not shorter than 5 (five) days, including:
The appropriate bank statements for the economic operator's business account (*in the Republic of _____ this includes forms BON 2 or SOL 2, while the economic operator that is not established in the Republic of _____ proves this with an equivalent document comprising all the necessary data to determine the meeting of this requirement of financial ability*) issued in the period since the beginning of the public procurement procedure until the day of submitting the tenders or within the deadline for delivering additional updated information which the Contracting Entity awarded to the economic operator which show that the economic operator meets the requirement mentioned in this item of the public procurement documentation.

If the economic operator is justifiably not able to deliver the documents and evidence regarding economic and financial ability that the Contracting Entity requires, it can prove its economic and financial ability by delivering:
A **Statement** in which it is visible that the economic operator meets the requirement from item 4.2.2. of the procurement documentation.

If the economic operator (tenderer/group of economic operators) relies on the capacitiy of other entities to prove that it meets the criteria of economic and financial standing, the Contracting Entity shall require their solidary liability for contract execution (in accordance with Article 276 of the Public Procurement Act). If the economic operator (tenderer/group of economic operators) relies on the ability of other entities in order to prove the meeting the economic and financial ability criteria, it shall deliver a Statement corresponding to Annex III.b - Form - Statement of making available the resources (economic and financial ability), and accepting solidary liability for contract execution.

4.3. ABILITY REQUIREMENTS IN THE EVENT OF A GROUP OF ECONOMIC OPERATORS

NOTE: Economic operators can join to form a group of economic operators (tenderer) that jointly fulfils all required criteria.

The group of economic operators may rely on the abilities of group members or other entities under the conditions stipulated in the Public Procurement Act and the procurement documentation.
A number of economic operators can join and submit a joint tender, regardless of the nature of their relations.
The economic operators' group tender sheet must contain data from Article 7, paragraph 2, item 2 of the Rulebook on procurement documentation and the documentation relating to tenders in

public procurement procedures for every group member with an obligatory indication of the group leader authorised to communicate with the contacting entity.
All **economic operator group members** shall deliver a **separate eESPD form**. In this case all group member are obliged to fill in **Part II in their eESPD form**. **Information about the economic operator, *Section A*: *Information about the economic operator: FORM OF PARTICIPATION with YES and other required information (a, b and c - if applicable).***
The Contracting Entity requires from the selected business operator group solidary liability in contract execution, but no specific legal form.

4.4. THE ABILITY REQUIREMENTS IN THE CASE OF SUBCONTRACTORS AND IN THE EVENT OF RELYING ON OTHER ECONOMIC OPERATORS

The economic operator can rely on the capacities of other business entities in order to prove meeting the technical and professional ability, regardless of the legal nature of their relation. If the economic operator relies on the capacities of other entities to prove that it meets the criteria of economic and financial standing, the Contracting Entity shall request their solidary liability for performing the contract.
If the economic operator relies on the capacities of other entities, it shall prove to the Contracting Entity that it will have at its disposal all the necessary resources for performing the contract, e.g. other entities' shall place their resources at the economic operator's disposal. In this case the business operator which offered the financially most suitable offer as part of the updated additional documents shall provide evidence upon the request of the Contracting Entity, (not delivered in the tender).
The Contracting Entity shall require the economic operator to replace the entity on whose ability it relied on in order to prove the selection criteria if on the grounds of Article 275, paragraph 1 of the Public Procurement Act, it is determined that there are exclusion grounds for that entity or that the entity does not meet the relevant selection criteria.
The economic operator which submits the offer **independently** but relies on the capacity of at least one other economic operator, shall deliver in the tender a filled out eESPD form for themselves along with a **separate** filled out eESPD form for **every economic operator it relies on.**
In this case the economic operator shall fill in **Part II in their eESPD form**. **Information about the economic operator, Section C: *Information about reliance on the capacities of other entities: RELIANCE with YES.***
The economic operator that intends to subcontract the public procurement contract is obliged to fill in **Part IV of the eESPD form**. **Criteria for selection of business operator, *Section C: Technical and professional ability: point 10.***
and deliver the following in the tender:

1. specify the part of the contract it intends to subcontract (by subject or quantity, value or percentage);
2. provide information about subcontractors (name or company name, registered office, OIB or national identification number, account number, subcontractor's legal representatives)
3. deliver the European Single Procurement document for the subcontractor.

If the economic operator which intends to subcontract part of the public procurement contract **does not rely** on the subcontractor's capacity to prove meeting the technical and professional requirements from item 4 of the procurement documentation, then the entity needs to fill in **Part II of the eESPD form. Information about the economic operator, *Section D*: *Information concerning subcontractors on whose capacity the economic operator does not rely: SUBCONTRACT with YES and other required information.***

If the business operator subcontracted part of the public procurement contract, the data on the appointed subcontractors and parts of the contract which shall be performed are obligatory parts of the public procurement contract.

Due to the specificity of the procurement subject and the specific conditions of its performance, its long duration, the financing method and the risk taken over by the service provider (the selected tenderer), the Contracting Entity will not pay the subcontractor the fee for part of the contract that the subcontractor performed, as foreseen by Article 223 of the of the Public Procurement Act. The detailed explanation is provided in section 12 of the contract proposal which forms an integral part of the procurement documentation.
In the event of change of subcontractor, introducing one or more new subcontractors, taking over the execution of part of the public procurement contract which was previously subcontracted, the provisions of Article 224 and Article 225 of the Public Procurement Act shall apply.
The participation of subcontractors does not impact the contractor's liability to execute the public procurement contract.

5. EUROPEAN SINGLE PROCUREMENT DOCUMENT (ESPD)

5.1. OBLIGATION TO DELIVER THE ESPD AS PRELIMINARY EVIDENCE

The economic operator shall deliver in the tender the **European Single Procurement Document,** i.e. the **ESPD form** (updated formal statement by the economic operator) as preliminary evidence instead of the certificates issued by public authorities or third parties, confirming that the economic operator:

1. is not in the situation due to which the economic operator should or could be excluded from the public procurement procedure (exclusion grounds);
2. meets the required selection criteria.

The economic operator shall deliver the European Single Procurement Document in the tender. The European Single Procurement Document shall be delivered in electronic form only.

Before making the decision, the Contracting Entity shall ask the tenderer who submitted the most suitable financial offer to deliver the updated additional documents within an appropriate deadline, no sooner than five days, unless the Contracting Entity already has the documents. Updated additional documents are the documents containing valid information corresponding to the current factual state at the moment of delivery to the Contracting Entity and confirming the information stated in the ESPD form.
If the Contracting Entity requires the delivery of updated additional documents, and if the tenderer who submitted the most suitable financial tender does not deliver the documents within the deadline or does not prove compliance with the requirements referred to in Article _____ of the Public Procurement Act, the Contracting Entity shall reject the tenderer's offer and act in accordance with Article _____ of the Public Procurement Act in relation to the tenderer that submitted the next most suitable offer or shall cancel the public procurement procedure, if there are reasons for cancelling.

5.2. INSTRUCTION TO FILL OUT THE ESPD FORM

The Contracting Entity created the electronic version of the eESPD form in the .xml format through the EOJN system - the eESPD request in which the entity entered their basic information and defined the required evidence and attached the eESPD request (in .xml and .pdf form) to this tender documentation.
Business entities are obliged to create in the eESPD form (in .xml format) and deliver their reply in accordance with the Contracting Entity's requirements.

NOTE: Every Contracting Entity should amend this to their specific national public procurement framework.

Instruction to download the eESPD form and create the eESPD reply:
the Contracting Entity's eESPD request is downloaded in the .xml format from the list of posts as part of the procurement documentation and the reply is created through the _____ platform.
Creating the eESPD reply on the _____platform through the ESPD module:
Select "My ESPDs" under the "ESPD" menu and select section "New ESPD reply"
Open the ESPD request in the .xml format.
The _____ automatically generates the basic information regarding the procedure and the economic operator inputs the reply for the required information using the _____ navigation ("next", "Save and next" and "back"). eESPD form - the reply is generated in the .pdf and .xml format- The eESPD reply is generated in the .pdf and .xml format and the economic operator downloads it in the .zip file to its computer. At the moment of submitting the electronic offer, the economic operator attaches the generated eESPD form - reply in .xml format. In addition to filling in the eESPD form through the EOJN platform, the economic operator can deliver the filled out eESPD form thorugh the service for electronic filling out of the ESPD (.xml format) of the European Commission available at:
https://ec.europa.eu/growth/tools-databases/espd

The eESPD form shall be filled for the following parts:

Part I: Information concerning the procurement procedure and the Contracting Entity or Contracting Entity
Part II: Information about the economic operator
Part III: Exclusion grounds
- **A: Grounds relating to criminal convictions**
- **B: Grounds relating to the payment of taxes or social security contributions**
- **C: Grounds relating to insolvency, conflicts of interests or professional misconduct** - according to the indicated in item 3.2 for the procurement documentation

Part IV: Selection criteria of economic operator - in accordance with item 4 of the procurement documentation

The economic operator who participates **alone** and **does not rely** on the capacities of other entities shall fill in only **one** ESPD form.
All **economic operator group members** shall deliver a **separate ESPD form**.
The economic operator which submits the offer **independently** but relies on the capacity of at least one other economic operator, delivers within the tender a filled out eESPD form for themselves along with a **separate** filled out eESPD form for **every economic operator it relies on.**
The ESPD does not need to be signed and certified, a tender submitted by electronic means through the _____ obliges the tenderer within the period of validity of the tender whether or not it is signed and the Contracting Entity may not reject such offer for that reason alone.

6. TENDER DATA

NOTE:
Besides regular tender documentation, it is important that economic operators (tenderer) fulfille and submit all required tables (investment value, payment and savings plan, etc.) so that its bid would be complete.

6.1. TENDER CONTENT AND METHOD OF DRAFTING

When drawing up its tender, the tenderer shall comply with the requirements and conditions stated in the tender documents and shall not alter or supplement the text of the tender documents.

The economic operator can download the tender documentation at Official _____ web site (https:/_____/).
The tenderer shall draft the tender in document format requested by the Contracting Entity: .pdf format (except cost estimate, e-ESPD answer, Investment Value (Annex 7 to the Energy Performance Contract - Annex IV), Fee Payment Plan and Savings Plan (Annex 8 to the Energy Performance Contract - Annex IV)).
The Cost Estimate, the Investment Value (Annex 7 to the Energy Performance Contract - Annex IV) and the Fee Payment Plan and Savings Plan (Annex 8 to the Energy Performance Contract - Annex IV) are to be filled-in and delivered in .xls format. The Cost Estimate shall not be modified; only the fields foreseen for data entry may be filled in.

The tender must include as follows:

1. **a completed tender list, including binding of the tender** in line with the Electronic Public Procurement Classifieds
2. **a completed cost estimate**
3. **a completed ESPD form in .xml format**
4. **a tender guarantee**

   Just to clarify, if the guarantee is submitted as a bank guarantee, it must be submitted in hard copy, i.e. separated from the electronic submission of tender. In case of cash deposit payment, the payment certificate shall be submitted whiting e-tender.

5. **a completed annex III a - Statement of Acceptance of Conditions, Requirements and Risks**
6. **a completed annex III b - Statement on placing resources at disposal and on accepting solidary liability for performing the contract**
7. **a completed annex 7 from the Contract proposal – Investment Value**
8. **a completed annex 8 from the Contract proposal - Payment Plan and Savings Plan**
9. **a completed annex 9 from the Contract proposal - Plan of implementation of the Measures for improving energy efficiency**

A tender submitted by electronic means through the _____ obliges the tenderer within the period of validity of the tender whether or not it is signed and the Contracting Entity may not reject such offer for that reason alone.
The Electronic Public Procurement Classifieds guarantees that the tender and all its parts submitted by electronic means of communication are securely bounded into one integral part.
If the tender parts are submitted by means of communication other than electronic ones, the tenderer shall indicate which parts are submitted by those means. The tender or part of the tender submitted by means of communication other than electronic ones are drafted in a way to form one integral part. The tender or part of the tender is bounded in order to prevent subsequent removal or insertion of sheets. The tender parts such as tender guarantee, data storage media and similar which cannot be bounded shall be marked by the tenderer with title and indicated as tender parts.

By the moment of expiration of the validity of the tender, the tenderer can **alter its tender** or **withdraw it**.
The tenderer shall submit the alteration or the withdrawal in the same way as he/she submitted the original tender by indicating them as such. If during the period reserved for the submission of tender the tenderer modifies its tender it shall be deemed to have been submitted at the time of delivery of the last amendment to the tender.

Within a public procurement procedure the economic operator can classify certain data, including technical or trade secrets and confidential characteristics of the tenders and requests for participation in accordance with the law, regulations or company by-laws. If an economic operator classifies certain data, it shall specify the legal grounds for marking such data as confidential. **At the request of the Contracting Entity**, economic operators shall submit act/acts which they indicated as the legal grounds for marking data as confidential in order to enable the verification of the existence of such legal ground, i.e. the review of the validity of the application and marking the document as confidential.
The economic operator is not allowed to classify the following: entire tender, cost estimate, catalogue, data regarding award criteria, public documents, certificates from public registers, and other data which in accordance with a specific law or subordinate regulations should be published or should not be classified. If the economic operator marked such data as confidential, the Contracting Entity can reveal them in accordance with Article _____ of the Public Procurement Act shall apply.

6.2. TENDER SUBMISSION

NOTE: Contracting Entity should amend this chapter to their national public procurement regulations.

6.2.1. TENDER SUBMISSION BY ELECTRONIC MEANS OF COMMUNICATION

The tender shall be submitted by electronic means of communication through the Electronic Public Procurement Classifieds of the Republic _____, by referring to the electronically published call for tenders and electronic access to tender documentation.
The electronic transfer and the publication of the public procurement information, tender documents and electronic transfer and tender submission is performed through the Electronic Public Procurement Classifieds of the Republic _____.
The Contracting Entity and the economic operator shall communicate and exchange the data by electronic means in accordance with the Public Procurement Act through the Electronic Public Procurement Classifieds of the Republic of _____.
The communication, data exchange and storage is performed in such way to preserve the data integrity and
The Contracting Entity shall not in any way be held responsible for the possible faulty functioning of Electronic Public Procurement Classifieds of the Republic of _____, interruption in the functioning of Electronic Public Procurement Classifieds of the Republic of _____or the impossibility of an interested economic operator to electronically submit an offer through Electronic Public Procurement Classifieds of the Republic of _____ within the deadline. In case of unavailability of the Electronic Public Procurement Classifieds of the Republic of _____ the provisions of Articles _____ of the Public Procurement Act shall apply.
The Electronic Public Procurement Classifieds of the Republic of _____ encrypts the offer in order to disable the its inspection before the expiration of the deadline for the offer submission. The offers' content shall not be considered before the expiration of the deadline for their submission.
Detailed instructions on tender submission by electronic means of communication and information regarding the specifications required for electronic tender, including cryptographic protection, are available on the Electronic Public Procurement Classifieds of the Republic of _____web site: https://_____.

6.2.2. THE SUBMISSION OF TENDER PARTS BY THE MEANS OF COMMUNICATION OTHER THAN ELECTRONIC ONES

The tender shall be submitted by electronic means of communication through the Electronic Public Procurement Classifieds of the Republic of _____except in cases defined by the Public Procurement Act, when the **tender or tender part can be submitted by means of communication other than electronic ones**, e.g. in case of the submission of original documents or proofs which cannot be submitted by electronic means of communication (e.g. tender guarantee in a form of bank guarantee) etc.
In that case the tender part shall be submitted in a sealed envelope to the Contracting Entity's address indicated in the tender documents. The envelope should contain the following indications: Contracting Entity's name and address, tenderer's name and address, procurement reference number, subject of procurement, label "tender part submitted separately" and indication "do not open".
The sealed envelope containing the tender part shall be delivered by the economic operator in person or by post at the following address: _____
or shall be submitted directly at the: _____at the same address.
The tender parts submitted by means of communication other than electronic ones must be delivered before the expiration of the deadline for the offer submission and in that case the tender is deemed submitted at the moment of the submission of the tender by electronic means of communication.

Note
The tender parts delivered by means of communication other than electronic ones shall be deemed delivered when they are actually received by the Contracting Entity before the expiration of the deadline for the offer submission. Therefore, the submission of an act to the authorised postal intermediary within the deadline for tender submission shall not suffice.

6.3. TENDER VERSIONS

The tender versions are not permitted.

6.4. TENDER PRICE AND CURRENCY BIDS DETERMINATION

The tender price shall be indicated in numbers in absolute value and in EUR.
The price shall be invariable.

NOTE:
Price is invariable in cases where operating costs make for small proportion of whole life costs. If operating cost are significant then indexation of payment fee during the years is recommended. Part of fee to be indexed should be in relation to operating costs and not to capital expenditure or finance costs. Additionally, indexes to be used must be in relation to type of costs that are to be indexed.

The tender price shall refer to the entire subject of the procurement.
The tender price without value added tax shall include all costs (special taxes, excise and custom duties, if any) and discounts.
If the tender price without value added tax indicated in the cost estimate should not be the same as the tender price without value added tax indicated in the tender list, the tender price without value added tax indicated in the cost estimate shall prevail in accordance with _____.
The more precise data on the unit price of every item, the total price of every item and the tender price are given in the Chapters ___ and _____ of the Contract proposal (offered fee, reference consumption, guaranteed savings).

6.5. SELECTION CRITERIA AND RELATIVE CRITERIA WEIGHT

NOTE:
Selection criteria on which bids are to be valued, alongside selection criteria for capable economic operators (tenders) presents crucial part of tender documentation.
In these types of complex projects, where there are a number of services, which are based on performance, like energy performance contracts, it is recommended to use model of most economically advantageous offer.
Since SMART EPC, has, besides energy services that rely on guaranteed savings additional energy and non-energy services, it should be carefully analysed what will be the factors for calculation of most advantageous offer. It is recommended that part of fee that is fixed, whether it includes only fee for energy efficiency services or fee for additional (non-commercial) energy or non-energy services, has highest impact on overall score. This represents payments from Contracting Entity to service provider and should therefore have the highest impact on overall score of the offer.
Other criteria can be payment for the right to commercially explore public lighting (concession fee) that service providers pay to Contracting Entity during the life of contract for right to commercially explore public lighting infrastructure. If that is the case, further analysis should be done to assess likelihood of the Contracting Entity revenues generated from offered fee (especially in case of variable fee that is linked to service providers commercial revenues) and impact on overall costs for Contracting Entity (fee payable to service provider for energy efficiency service etc.)
Also, one of additional criteria that should be included in calculation of most economically advantageous offer is the criteria on level of guaranteed energy savings (or additionally CO2 reductions, etc.) and possibly other factors regarding sustainability and climate mitigation or adaptation measures/impacts. Even though technical requirements should have minimum impacts that need to be achieved regarding these factors, additional points could be given to economic operators (tenderers) who want to exceed minimum requirements and are prepared to guarantee such results.
In some cases, Contracting Entity has interest in defining the profile of whole life costs of project. This may be the case in situations where Contracting Entity favours higher initial capital costs vs higher operational costs during lifetime of an asset. Since Contracting Entity will be responsible for maintenance and operation of the asset after Contract has ended, Contracting Entity will often search for solutions that have optimal whole life cost profile. Also, economic providers, might show initial capital expenditure as higher than it should be and operating costs lower than they are. This can happen because Contract draft defines calculations on contract terminations fee and economic operators can try to mitigate some risks in advance by showing higher capital expenditure in order to ensure better negotiations starting point if any such event should happen. Use of this criteria is very rear and unorthodox and it should be used only in cases where Contracting Entity has done extensive analysis on project costs and knows preferable whole life cost profile of an asset.
Another criteria that can be used in calculating most economically advantageous offer is the criteria that scores the experience of economic operators (tenderers) in providing similar services or realisations of similar projects. This criteria is usually used to give value to offers submitted by experienced service providers. The general assumption is that experienced service providers will make more precise calculations on real whole life costs of project due to their experience on earlier projects, as well as assumptions that they will better manage whole project and risks in project during its lifetime. All of this has value to Contracting Entity since it should somehow mitigate a number of risks during realisation of project. Even though most of risks are allocated on future service provider and there shouldn't be any cost for Contracting Entity, general interest of the Contracting Entity is that whole project runs smoothly and in accordance with initial plans.
Contracting Entity can also use other criteria, not mentioned here, to give proper value to offers that add additional value or benefits to the project or community. If Contracting Entity

decides to use other (qualitative) criteria it should be careful in specifying the documentation by which economic operators will prove this requirement and how will they guarantee its fulfilment throughout duration of project. Procedure should be fully transparent and offers must be valued on same merits. Scoring should be objective and verifiable. Contracting Entity should also have in mind that failure to execute (deliver on) any of elements that where scored during the most economically advantageous offer by service provider (economic operator-tendered) during realisation of project should result in Contract termination due to fault of service provider or penalties (if it is acceptable by national regulations) that are in correlation with number of points scored on that particular criteria.

One of example of defining most economically advantageous offer is given below:

EXAMPLE:
The selection criterion is **the most economically advantageous offer (ENP)**.
The most economically advantageous offer selection criterion and its relative significance:

Number	Criterion	Score
1	Tender price - Monthly fee (MF)	**70** points
2	Guaranteed normed active power of the Public Lighting System (GP)	**15** points
3	Offered "concession" fee (OCF)	**10** points
4	Ratio between actual value of total project live costs and sum of all monthly fees (WLC_o)	**5 points**
	Maximum score	100 points

The single tenderer's maximum score shall be obtained by adding together the number of points obtained per single criterion:

$$\mathbf{UB = MF + GP + OC + WLC_o}$$

Whereas:
UB - maximum score;
MF – number of points for the offered price;
GP - score obtained for the offered guaranteed normed active power of the Public Lighting System reported in kilowatts (kW);
OSV_o - score obtained for the ration between actual value of total project live costs and sum of all monthly fees;
The economically most advantageous offer is a valid offer with maximum score (UB).

The score shall be reported as two decimal digit (rounding to two decimal places is done by rounding from right to left according to the rule: if the previous number is equal to or greater than 5 then the number is rounded to a larger number; if the previous number is less than 5 then the number is rounded to a smaller number).
If two or more valid tenders are equally ranked in accordance with the selection criteria, the Contracting Entity shall choose the tender which has been received earlier.

1. <u>Financial criterion - tender price (MF)</u>
The maximum score which can be obtained according to this criterion is 70.

The tender with the lowest offered price within the public procurement procedure shall be awarded the maximum score. Other tenders shall be awarded with lower number of points according to the following formula:

$$MF = (MFn/MFp) \times 70$$

Whereas:

MF = number of points that the tender received for the offered price rounded to two decimal places

MF_n = lowest tender price within the public procurement procedure

MF_p = tender price which is subject to evaluation

The tenderer inserts the tender price in the Cost Estimate, Investment Value (Annex 7 to the Energy Efficiency Contract) and in the Fee Payment Plan and Savings Plan (Annex 8 of the Energy Performance Contract). If the tender price in the Cost estimate differs from the tender price in the Investment value from Annex 7 of the Energy Efficiency Contract) and/or the Fee Payment Plan and Savings Plan (Annex 8 of the Energy Efficiency Contract), the tender price from the Cost estimate shall be evaluated and shall represent the final tender price.

2. Non financial criterion - Guaranteed normed active power of the Public Lighting System (GP)

The maximum score which can be obtained according to this criterion is 15.

The valid tender with the lowest Guaranteed normed active power of the Public Lighting System offered within the public procurement procedure shall be awarded with the maximum score. Other tenders shall be awarded with lower number of points according to the following formula:

$$GP = \frac{GP_{min}}{GP_p} x\ 15$$

Whereas:

GP = score obtained by the tender for the offered Guaranteed normed active power of the Public Lighting System rounded to two decimal places;

GP_{min} = lowest Guaranteed normed active power offered within the public procurement procedure (reported in kW);

GP_p = Guaranteed normed active power offered in the tender which is subject to evaluation (reported in kW).

The tenderer shall insert the offered Guaranteed normed active power (GP_p) in the Annex 8. **Payment Plan and Savings Plan; Entry data _Tenderer- Guaranteed normed active power of the Public Lighting System (kW) (cell D8).**

If the Tenderer does not submit filled out Annex within the tender and/or does not insert the offered Guaranteed normed active power (GPp) in the Annex 8. Payment Plan and Savings Plan (Entry data _Tenderer- Guaranteed normed active power of the Public Lighting System (kW) (cell D8)) than tender will be scored with 0 points within this criterion.

3. Financial criterion – Offered fee for right to commercially explore public lighting infrastructure (Concession fee) (OCF)

The maximum score which can be obtained according to this criterion is 10.

The valid tender with the lowest Guaranteed normed active power of the Public Lighting System offered within the public procurement procedure shall be awarded with the maximum score. Other tenders shall be awarded with lower number of points according to the following formula:

$$OCF = \frac{OCF_p}{OCF_{max}} x\ 10$$

Whereas:
OCF = score obtained by the tender for criteria offered fee for the right to commercially explore public lighting infrastructure (Concession fee) rounded to two decimal places
OCF_{max} = Highest offered fee for the right to commercially explore public lighting infrastructure (Concession fee) offered within the public procurement procedure (reported in kW)
OCF_p = Offered fee for the right to commercially explore public lighting infrastructure (Concession fee) offered in the tender which is subject to evaluation (reported in kW).

The tenderer shall insert the offered fee for the right to commercially explore public lighting infrastructure (Concession fee) in the Annex 8. **Payment Plan and Savings Plan; Entry data _Tenderer- Guaranteed normed active power of the Public Lighting System (kW) (cell D8).**
If the Tenderer does not submit filled out Annex within the tender and/or does not insert the offered fee for the right to commercially explore public lighting infrastructure (Concession fee) in the Annex 8. Payment Plan and Savings Plan (Entry data _Tenderer- Guaranteed normed active power of the Public Lighting System (kW) (cell D8)) than tender will be scored with 0 points within this criterion.

4. *Non financial criterion - Ratio between actual value of whole life costs of project and sum of all monthly fees (OSV_o)*
The maximum score which can be obtained according to this criterion is 5.
The actual value of total project live costs is calculated by application of the discount rate of 3,3 %.
The valid tender with ratio between actual value of total project live costs and sum of all monthly fees shall be awarded with points according to the following table:

Value of ratio between SV and total sum of all Fees	Score
18%<SVo	0
16%<SVo≤18%	0.5
14%<SVo≤16%	1.5
10%<SVo≤14%	**5**
8%<SVo≤10%	1.5
6%<SVo≤8%	0.5
0%<SVo≤6%	0

WLC_o is calculated according to the following formula:

$$\mathrm{WLC_o} = 100\% - \frac{WLC_p}{Sum\ of\ all\ monthly\ fees}$$

Whereas:
WLC_P - actual value of whole life costs of the project from the table Investment Value contained in the tender which is subject to evaluation.

The sum of all monthly fees represents the total Contract value, i.e. the sum of all monthly fees during the use phase (____ years) in accordance with Article 2.2.1.d) of the Contract.

The discount rate which shall be used in order to calculate the actual values of total project costs form the table Investment Value shall amount to 3.30% (the same represents the average interest rate defined by National Bank and in force on the date of the public procurement announcement.

The ratio between the actual value of the project total live costs and the sum of all monthly Fees is automatically calculated in the annex Investment Value (Annex 7 of the Energy Performance Contract) on the basis of inserted costs.

If the Tenderer does not submit filled out Annex within the tender and/or if the Annex is not correctly filled out than tender will be scored with 0 points within this criterion. By correct filled out Annex it is considered that the tenderer has filled out all tables and all costs from the Annex 7 of the Energy Performance Contract and that the tender price in the Cost estimate does not differ from the tender price in the Investment value from Annex 7 of the Energy Efficiency Contract) and/or the Fee Payment Plan and Savings Plan (Annex 8 of the Energy Efficiency Contract).

6.6. LANGUAGE AND SCRIPT FOR DRAFTING THE TENDER

The tender shall be drafted in _____ language and Latin script.
If some documents and/or proofs of requested procurement documents should be drafted in foreign language, the economic operator shall submit the translation of those documents/proofs into _____language.
If any other tenderer's document is issued in foreign language he/she shall submit it along with the translation into _____ language if not prescribed otherwise by this procurement document.
If the submitted translation (not authenticated) should leave any ambiguities which could prevent the Contracting Entity to make a definite decision on some fact, the Contracting Entity reserves the right by applying the provision of the Article _____ Public Procurement Act to request a delivery of an authenticated translation of certificates indicated in the Article _____ Public Procurement Act for the purpose of explanation and supplementation.
By way of derogation it is possible to indicate terms, project names or publication names and other in foreign languages and use internationally recognised expressions, i.e. so called internationalisms, foreign words and adaptations.
Although the Contracting Entity had prepared the complete procurement documents and the contract with all corresponding annexes in English, only the _____ version shall prevail. In the event of possible disagreement or varying interpretation of the _____ and English version of this Contract, its annexes and other documentation, only the _____ version shall be applicable.

6.7. TENDER VALIDITY PERIOD

The tender validity period is the period within the tender opening date (including the opening day) and __.__.____.
At the request of the Contracting Entity, the tenderer can extend the tender validity period.
If during the public procurement procedure the tender validity period and tender guarantee should expire, the Contracting Entity shall request the extension of the tender validity period and guarantees before the selection from the tenderer who submitted the economically most advantageous offer within a reasonable time not less than five days.

6.8 DATE, TIME AND PLACE OF PUBLIC TENDER OPENING

The tender submission deadline is _____ until _____ hours.
The tender part/parts which is/are submitted separately from the tender can be delivered by registered mail at the following address: **_____.**
The public tender opening shall take place on _____ 202_ at _____ hours in the _____.
The public opening of tenders may be witnessed by authorised representatives of the tenderers and other persons. The right to actively participate in the procedure of public opening of tender have only member of expert commission for public procurement and authorised representatives of the tenderers.
The authorised representatives of the tenderer shall present their authorisation in writing before the tender opening.

7. OTHER PROVISIONS

7.1. ADDITIONAL INFORMATION, EXPLANATIONS OR MODIFICATIONS REGARDING THE TENDER DOCUMENTS

The Contracting Entity can modify or complete the tender documents within the expiration of the tender validity period.
The economic operators can deliver their requests for additional information, explanations and/or modifications regarding the tender documents through the Electronic Public Procurement Classifieds of the Republic _____, module Questions/Clarification of the Procurement Documentation. Provided that the request has been timely submitted, the reply shall be made available to all economic operators through the web site of the Electronic Public Procurement Classifieds of the Republic of _____ https://_____/) in accordance with the Article _____ of the Public Procurement Act .
A request is considered timely if delivered to the Contracting Entity at the latest on the ____ (_) **day** before the day of expiry of the period reserved for the presentation of tenders.
If the request is delivered timely, the Contracting Entity shall make available the reply, additional information and explanations without delay and at the latest on the _____ (_) day before the deadline for presentation of tenders and on the same way and on the same web sites as in case of basic documentation, without indicating data on the request applicant.

The Contracting Entity shall extend the deadline for the tender submission if the additional information, explanations and modifications regarding the tender documents have not been made available at the latest on the _____ (__) day before the expiration of the deadline reserved for the presentation of tenders, although timely requested by the economic operator.

7.2 GUARANTEE TYPE, MEANS AND TERMS

7.2.1. TENDER GUARANTEE

The tenderer shall deliver the tender guarantee amounting to _____ EUR (_____ EUR).

In the event of a group of economic operators, the tender guarantee shall be issued on behalf of all group members, and not only a single member of a group of economic operators. The guarantee shall include the indication that it is referred to a group of economic operators.

The tender guarantee is a guarantee in the event that the tenderer decides to withdraw its tender during its term of validity, failes to submit the updated accompanying documentation in accordance with Article _____of the Public Procurement Act shall apply, refuses to correct a calculation error, refuses to sign the public procurement contract or fails to submit the performance guarantee.
The tender guarantee shall be in the form of a bank guarantee payable on demand. The tender guarantee shall be unconditional and with the term of validity corresponding to the tender validity period. The economic operator can submit the tender guarantee which exceeds the tender validity period.

Note:
The bank guarantee text **SHALL** contain **ALL previously listed 5 CASES for which the guarantee is issued**:

1.tenderer's decision to withdraw its tender during its term of validity
2. failure to submit the updated accompanying documentation in accordance with Article _____of the Public Procurement Act.
3. refusal to correct a calculation error

4. refusal to sign the public procurement contract
5. failure to submit the performance guarantee.

The tender guarantee shall be delivered in original form, separated from the electronic submission of tender, in writing, in a sealed envelope indicating the tenderer data, with an addition: „_____",, i.e. in accordance with the paragraph 6.2.2. of the tender documentation.
In case of a group of economic operators, the tender guarantee can be submitted by a single group member.
The tender guarantee **shall be submitted before the expiration of the deadline reserved for the tender submission and in that case the tender is deemed submitted at the moment of the submission of the tender by electronic means of communication.**
Instead of the tender guarantee in a form of a bank guarantee, the tenderer can provide a cash deposit in the requested amount into the following account:

(Name of Contracting Entity): _____
IBAN: _____
Model: _____
Reference number: _____
Description of payment: _____

The payment certificate shall be submitted within the e-tender.

7.2.2 PERFORMANCE GUARANTEE

7.2.2.1 GUARANTEE IN THE PHASE OF THE MANAGEMENT AND CONTROL CENTRE IMPLEMENTATION, DESIGN AND RECONSTRUCTION AND/OR MODERNISATION PHASE

NOTE:
Performance guarantees are divided in to two different documents. First is the performance guarantee for capital investments of project in the reconstruction and modernisation phase and the second performance guarantee is for the use (operation) phase of the project. First performance guarantee is caped to 10% of the amount of capital investments while second performance guarantee is caped at amount of yearly fees payable to service provider.
This performance guarantees are in accordance with guarantees specified in Contract draft. Rationale behind this way of specifying guarantees is that risk profiles of project change when project is in reconstruction and modernisation phase oppose to use/operation phase. Since risk profiles are different there is no need to have to expensive performance guarantee since the cost of obtaining that guarantee will be included in costs of the project and eventually paid by Contracting Entity.
This represents a recommendation and best practice on how to prescribe performance guarantees but every Contracting Entity can amend it to their specific need or circumstances depending on project scope, risks etc.

The selected tenderer (Service provider) to whom the public procurement is awarded shall deliver to the Contracting Entity the performance guarantee for the case of breach of contractual obligations in the phase of Management and Control Centre implementation, design and reconstruction and/or modernisation phase in accordance with chapter 19 of the Contract proposal which is a constituent part of this tender documentation.

The guarantee shall be delivered in EUR. The amount of the guarantee is calculated in accordance with the Annex Investment Value (Annex 7 to the Contract) as 10% of the total value of initial

capital costs of project without VAT according to costs specified in Annex Investment Value (Annex 7 to the Contract). (specify all cells that contain capital costs).

The guarantee shall be delivered within 15 (fifteen) days of the Day of signing of this Contract, under the threat of Contract termination and collection of the tender guarantee.

The performance guarantee shall be in the form of an irrevocable, unconditional bank guarantee, payable on first demand, without any right to protest, valid for ____ (_____) months (duration of reconstruction and modernisation phase plus additional time) since the day of issue. The bank guarantee shall be delivered to the address: _____.

The bank guarantee shall be delivered in the _____ language, which shall also be the language of its interpretation. In the event that the contract is awarded to a group of economic operators (tenderers), the guarantee shall be submitted by one member of the group of economic operators (in that case the guarantee shall be on behalf of all group members) entirely or partially along with other members of the group of economic operators.

Instead of the tender guarantee in a form of a bank guarantee, the selected tenderer (Service provider) can provide a cash deposit in the requested amount into the following account:

Payment recipient: _____
IBAN: _____
Model: _____
Reference number: _____
Payment description: please indicate - performance guarantee - indicate the title of the procurement subject and the procurement reference number.

7.2.2.2 GUARANTEE IN THE USE PHASE

The selected (Service provider) to whom the public procurement is awarded shall deliver to the Contracting Entity the performance guarantee for the case of breach of contractual obligations in the Use Phase.

The guarantee shall be delivered in EUR, in the amount of the sum of 12 (twelve) Offered Fees excluding VAT:

The guarantee shall be delivered no later than 15 (fifteen) days before the expiry of the performance guarantee in the MCC Implementation Phase, Designing Phase and Reconstruction and/or Modernisation Phase, under the threat of contract termination and collection of performance guarantee in the design phase and in the reconstruction and/or modernisation phase.

The performance guarantee shall be in the form of an irrevocable, unconditional bank guarantee, payable on first demand, without any right to protest, valid for a minimum of one year since the date of issue. The bank guarantee shall be delivered to the address: _____.

The bank guarantee shall be updated during the term of the Contract (up to its expiry) by replacing it with a new identical valid bank guarantee 15 (fifteen) days before its expiry. The bank guarantee shall be delivered in the _____ language, which shall also be the language of its interpretation. Should the Provider fail to deliver a new bank guarantee. the Contracting Entity shall, before the expiry of the currently valid bank guarantee, collect the guarantee in the full amount. Should the Provider subsequently deliver a new valid bank guarantee, the Contracting Entity shall return it 90% (ninety percent) of the collected amount of the previous guarantee if that guarantee has not

been used to remedy malfunctions and deficiencies due to the Provider's failure to fulfil obligations arising from the Contract. In the event that the contract is awarded to a group of economic operators (tenderers), the guarantee shall be submitted by one member of the group of economic operators (in that case the guarantee shall be on behalf of all group members) entirely or partially along with other members of the group of economic operators.

Instead of the guarantee in a form of a bank guarantee, the selected tenderer (Service provider) can provide a cash deposit in the requested amount into the following account:

Payment recipient: _____
IBAN: _____
Model: _____
Reference number: _____
Payment description: please indicate - performance guarantee - indicate the title of the procurement subject and the procurement reference number.

7.3 SUPPORTING DOCUMENTS TO BE RETURNED TO THE TENDERERS AFTER THE END OF THE PUBLIC PROCUREMENT PROCEDURE

Immediately after the end of the public procurement procedure and no later than ten days from the signing of the public procurement contract, i.e. submission of the performance guarantee, the Contracting Entity shall return the tender guarantee to all tenderers.

7.4 SPECIAL AND OTHER TERMS

The commercial practices shall not be applied.
In the event that the Provider does not realise the Adoption of the Measures for improving energy efficiency of the public lighting system within the __ (_____) months of the Day of signature of this Contract, for reasons of not fulfilling its obligations referred to in this Contract and Technical Requirements (Annex 3 to the Contract) and the Tender, the Contracting Entity shall be entitled to charge the Provider for contractual penalty due to delay, except in cases of force majeure and in cases where the Contracting Entity does not fulfil its obligations.
Contractual penalty for delay referred to in article 23.1.2 shall amount to 0.2% of the reconstruction and/or modernisation of the public lighting system value or the value of the Measures for improving energy efficiency defined as Provider's investments in the attachment titled Investment value (Annex 7 of the Contract) per day of delay. Reconstruction and/or modernisation value includes the costs of reconstruction and/or modernisation of the Public Lighting System (Part A): item 1 Design, consents and permits and item 2 Reconstruction and/or modernisation.
The remaining procedures regarding the contractual penalty are defined in chapter 23 of the Contract proposal.
The payment of the contractual penalty does not exempt the contractor from the obligation to execute the subject of procurement.

If the contractor is a foreign person, his/her legal representatives and/or persons in charge of contacting the Contracting Entity and/or required professionals shall follow the laws and regulations in force defining the work and residence of the foreign person in the Republic of _____ (Aliens act (_____).
They shall also guarantee the permanent service of translation into _____ language at their own expense if they do not understand the _____ language.
In accordance with the Public Procurement Act, during the public procurement contract execution, the certain economic operator can take part in it as independent tenderer, as a member of a group of economic operators or as selected tenderer's subcontractor.

7.5 DECISION DEADLINE

The decision deadline is **120 days** from the day of the expiration of the deadline for tender submission.
The Contracting Entity defined a longer period than the one determined by the Public Procurement Act (_____) due to the procurement subject complexity and in connection with which a longer tender evaluation procedure is expected. Furthermore, it is a procedure which includes the most economically advantageous offer selection criterion which makes the analysis more complex and the Contracting Entity wishes to leave itself enough time to perform the detailed analysis and tender evaluation and scoring of valid tenders in accordance with the most economically advantageous offer selection criterion. In addition, the Public Procurement Act (_____) provides for the possibility to complete/explain the tender, the obligation to request the correction of the calculation mistake, explanations for the unusually low offer, change of subcontractor and subjects on whose reliability the tenderer relies on if it is determined that there are grounds for their exclusion, possibility of requesting updated additional documents and other, which significantly prolongs the examination and evaluation procedure and the Contracting Entity considers the deadline of 30 days to be too short to perform all the described actions. The deadline of 120 days is the maximum time limit and the Contracting Entity shall make a decision in a shorter time limit.

7.6 PAYMENT DEADLINE, METHODS AND TERMS

The Contracting Entity accepts the e-invoice.
The tenderer shall send to the Contracting Entity exclusively an e-invoice.
The deadlines, manner and conditions of payment are defined in section 18 of the Contract draft which is a constituent part of the procurement documentation.

7.7 Deadlines for an appeal in the open procurement procedure AND THE NAME AND ADDRESS OF THE APPEALS AUTHORITY

The appeal can be submitted to the: _____ in writing. The appeal is to be delivered directly, via authorised provider of postal services or in an electronic manner via connected information systems of the State Commission and the _____.
The appellant is also obliged to submit a copy of the appeal to the Contracting Entity within the deadline for appeals.
The appeal can be submitted within **10 days** from the day of:

- publication of the call for tenders, if the appeal relates to the its contents or to the tender documentation:
- publication of the information about corrigenda, if the appeal relates to the contents of the corrigenda,
- publication of modifications to the tender documentation, if the appeal relates to the modified content of the tender documentation,
- opening of the tenders, if the appeal relates to the Contracting Entity's failure to provide a valid reply to a timely submitted request for additional information, clarification or modification of tender documentation, and if the appeal relates to the tender opening procedure;
- receipt of the award or cancellation decisions, if the appeal relates to the procedure of examination, evaluation and selection of tenders or to the reasons for cancellation.

For everything not regulated by the procurement documentation the provisions of the Public Procurement Act and subordinate regulations arising from it shall apply.

(Contracting Entity)

Energy Performance Contract - Template

Download editable Energy Performance Contract template here.

ENERGY PERFORMANCE CONTRACT

between

THE [_____]

and

[_____]

Done at _____ , [day] [month] 202_

In accordance with the …….. Act (…….. hereinafter referred to as: "……..") and in accordance with the Regulation on contracting and implementation of energy services in the public sector (Official Gazette no 11/15) (hereinafter referred to as: "the Regulation"), following the open public procurement procedure, procurement reference number……,

the [Contracting Authority], whose registered office is in ……, ……., ……., represented by ……., ……. (hereinafter referred to as: "the Contracting Entity")

and

[…….....] tenderer selected in the public procurement procedure ____ entered in the registry of the Commercial Court in [\], MBS [\], OIB [\], whose registered office is in [\], represented by [\], management board member (hereinafter referred to as: "the Provider")

(hereinafter collectively referred to as: "the contracting parties")

have entered into this Energy Performance Contract on [day] [month] 202...

INTRODUCTORY PROVISIONS

The Contracting Entity prepared the Tender Documentation of the procurement reference number _____ on ____202.. and published in the Electronic Public Procurement Classifieds under no____ (hereinafter referred to as: "Tender Documentation"), on the basis of which the open public procurement procedure has been carried out in accordance with the Public Procurement Act (Official Gazette no ……, hereinafter referred to as: "Public Procurement Act") in order to contract the provision of energy service by means of an energy performance contract based on the Measures for improvement of energy efficiency of the Public Lighting System in the […….....municipality] in accordance with means, conditions and terms foreseen by the Tender documentation and by the provisions of this Contract.

DEFINITIONS

The terms used in this Contract and Annexes to this Contract shall have the following meaning:

1. **Additional non-energy services** means all additional services that will be delivered by Provider additional to energy efficiency service of streetlighting which can include commercial and non-commercial services such as communication services, e-charging services, smart city services and applications etc. in accordance with Annex 1 Project scope (specifies places and scope of possible additional services equipment and technology) and Annex 3 Technical requirements (specifies minimal technical requirements for additional non-energy services);
2. **Date of signing of the Contract** means the first day of the month following the day of signing of this Contract by both contracting parties;
3. **Date of transfer of the Measures for improving energy efficiency of the Public Lighting System** means the day of expiry or termination of this Contract for any reason whatsoever defined by the Contract;
4. **Tender Documentation** means the tender documentation of the procurement reference number ____ of _____ published in the Electronic Public Procurement Classifieds under number _____;
5. **Energy Service** means the implementation of the energy efficiency project and other related activities based on the energy performance contract with a guarantee that in the reference conditions, it leads to a verifiable and measurable or estimable improvement of energy efficiency and/or energy savings, (in accordance with the Energy Efficiency Act);
6. **Energy** means electric energy in accordance with the Energy Act (Official Gazette no ……);
7. **GIS (Geographic Information System)** is the computer system for managing spatial data and their attributes;
8. **Maximum allowed normed active power of the Public Lighting System** is the maximum allowed total normed active power of all luminaires in the scope of implementation of the Measures for improving energy efficiency of the Public Lighting System after the implementation of the Measures for improving energy efficiency of the Public Lighting System, defined by the Contracting Entity.
9. **Measurement, monitoring and verification** means activities and procedures of monitoring, measuring and verification aimed at reliable calculation of effective Energy savings attributed to the Measures for improving energy efficiency of the Public Lighting System in accordance with Annex 4 to this Contract (Monitoring, measurement and verification plan – M&V Plan) developed in accordance with the IPMVP, volume I, EVO10000-1:2014 (in English: *International Performance Measurement and Verification Protocol*;
10. **Measures for improving energy efficiency of the Public Lighting System (Measures)** mean all activities regularly leading to a verifiable and measurable or estimable improvement of energy efficiency, i.e. to reduced energy consumption. The Measures represent all services (financing, designing, drafting of as-built project etc.), reconstruction and/or modernisation works, installation works, parts, elements, equipment and software used by the Provider for the reconstruction and/or modernisation of the Public Lighting System aimed at the improvement of energy efficiency of the Public Lighting System, i.e. energy service provision in accordance with the provisions of this Contract;
11. **Modernisation** means execution of construction, installation and other works on the existing public lighting system in order to maintain the basic requirements for the facility during its duration, replacement of worn-out and out-dated technical and technological parts, equipment and elements of the public lighting system with new ones that will not change the compliance of the facility with the location conditions according to which it was constructed;
12. **Fee** means the monthly amount of fee calculated and payable to the Provider for the provided service in accordance with the delivered quality and standard, prescribed in the annexes to this Contract, calculated according to the terms of this Contract;

13. **Billing Metering Point (BMP)** means the network point at which the distributor of electricity uses the meters and other equipment in order to control the parameters and Energy consumption;
14. **Authorised Representatives** are legal entities or natural persons authorised by the Contracting Entity or the Provider to represent them in certain activities in scope of this Contract. The Authorised Representatives are authorised to represent and act on behalf of the contracting party which has authorised them in accordance with the obligations and responsibilities that the contracting party has indicated in a special written document, i.e. authorisation. The Authorised Representatives of the contracting parties, who can prescribe and sign such appointments and authorisations are the Contracting Entity's and the Provider's responsible persons, i.e. the mayor for the Contracting Entity and the director of the Provider, or other persons authorised for representation of the Provider and of the Contracting Entity;
15. **Written statement on fully compliant implementation of the Measures for improving energy efficiency** means the document issued by an independent expert engaged by the Contracting Entity confirming that the Measures for improving energy efficiency have been fully implemented and that they are technically sound, entirely functional and in accordance with the Technical Requirements and Tender;
16. **Plan of implementation of the Measures for improving energy efficiency and of additional non-energy services** means the timetable of performing the activities of reconstruction and/or modernisation of the public lighting system, and forms an integral part of the Provider's tender;
17. **Tender** means the Provider's tender No _____ i.e. the most economically advantageous tender selected under the open public procurement procedure, procurement registration No _____, and forms an integral part of this Contract (Annex 6 to the Contract);
18. **Fair value of the Contract/Project** means the value calculated in accordance with the procedure described in Article 25.2.2 of the Contract representing the fair value of the project expressed in EUR (euro), calculated by taking into account all obligations and responsibilities of the contracting parties, investments and risks, i.e. calculated in accordance with Article 25.2.2;
19. **Adoption of the Measures for improving energy efficiency and additional non-energy services** means the Contracting Entity's written statement indicating that the Provider has reconstructed and/or modernised the public lighting system, i.e. fully implemented the Measures for improving energy efficiency and additional non-energy services in accordance with the Contracting Entity's requirements and the required standards defined in the Technical Requirements (Annex 3 to the Contract), and in accordance with Article 10.1.7 of the Contract. The Period of Project Use begins to run in the moment of Adoption of the Measures for improving energy efficiency and additional non-energy services, i.e. first day of the month following the day of Adoption of the Measures for improving energy efficiency and additional non energy services.
20. **Annexes** mean annexes to this Contract, defined by Article 28.1 of the Contract and form an integral part of the Contract;
21. **Project** means the provision of the energy service and additional non-energy services during the term of this Contract by financing, designing, reconstruction and/or modernisation of the Public Lighting System aimed at the improvement of energy efficiency and provision of additional non-energy services, i.e. implementation of the Measures for improving energy efficiency of the Public Lighting System of the …… and implementation of additional non-energy services, and at the guaranteeing of full functionality and compliance with the Technical Requirements (Annex 3 to the Contract) and the Tender (Annex 6 to the Contract) during the whole term of this Contract and in accordance with this Contract;
22. **MCC Implementation Phase** means the period which begins to run after the Date of signing of the Contract, by the development of the conceptual design of the Management & Control Centre (MCC), according to professional standards and all applicable regulations, the Tender (Annex 6 to the Contract) and Technical Requirements (Annex 3 to the Contract) and includes the development, testing and implementation of the MCC;
23. **Designing Phase** means the period which begins to run after the Date of signing of the Contract by the drafting of the design documentation for the implementation of the Measures for improving

energy efficiency and additional non-energy services in accordance with professional standards, applicable regulations, Technical Requirements (Annex 3 to the Contract) and the Tender (Annex 6 to the Contract), and ends with the issue of the Contracting Entity's approval of design documentation, in accordance with Chapter 8 of the Contract. In case that the Measures for improving energy efficiency of the Public Lighting System and implementation of additional non-energy services include activities for which the issue of a construction permit is required, it shall be considered that the Designing Phase has ended by the issue of the Contracting Entity's approval of the issued design documentation, i.e. submission of the main project for the obtaining of a construction permit. Nevertheless, the Provider has the responsibility and obligation to draft the design documentation entirely in accordance with all applicable regulations and to obtain all permits necessary to begin the activities inherent to the Measures for improving energy efficiency and implementation of additional non-energy services;

24. **Reconstruction and/or Modernisation Phase** means the period following the obtaining of the Contracting Entity's approval of the design documentation and, if necessary, of all permits and approvals of the competent institutions and third legal entities and/or natural persons, i.e. the period following the Designing Phase, and includes the activities of reconstruction and/or modernisation of the Public Lighting System in accordance with the design documentation, obtained permits and/or approvals and the Plan of Implementation of the Measures for improving energy efficiency and implementation of additional non-energy services, as well as applicable regulations, Technical Requirements (Annex 3 to the Contract) and the Tender (Annex 6 to the Contract), as stated in Chapter 9 of the Contract;
25. **Use Phase (Guaranteed Savings Phase)** means the period in which the Provider has the obligation to provide the energy service with a savings guarantee (guarantee of the energy performance of the implemented Measures) and additional non-energy services, guarantee of functionality and working order of the equipment, parts and elements installed in accordance with the Measures and implementation of additional non-energy services, as well as metering and savings verification) in accordance with the provisions of this Contract, all relevant laws and regulations, professional standards, Technical Requirements (Annex 3 to the Contract) and the Tender (Annex 6 to the Contract). The Use Phase begins by the Adoption of the Measures for improving energy efficiency and additional non-energy services by the Contracting Entity, i.e. first day of the month following the Adoption of the Measures for improving energy efficiency and additional non-energy services, and ends on the day of transfer, i.e. day of expiry or termination of this Contract;
26. **Reference installed power of the Public Lighting System** before the implementation of the Measures for improving energy efficiency of the Public Lighting System is based on the data on the existing public lighting system and is defined by the Contracting Entity. It includes the power of all luminaries, as well as losses thereof;
27. **Reference Energy Consumption** is energy consumption in the reference conditions before the implementation of the Measures for improving energy efficiency and additional non-energy services, used as the basis for comparison in the calculation of future Energy savings, and is defined in the annex Public Lighting System Reference Condition (Annex 2 to the Contract);
28. **Reconstruction** means the execution of construction and other works on the existing Public Lighting System which have an effect on the fulfillment of the essential requirements for that facility or which alter the compliance of the facility with the location requirements according to which the facility was built (upgrade, extension, removal of an exterior part of the structure, work aimed at altering the intended purpose of the facility or of a technological process etc.) or the execution of construction and other works on the ruins of an existing facility for the purpose of its reconstruction;
29. **Dimming regime** means the information on the percentage of active power regulation and the output luminous flux of one or more luminaires in relation to the standard active power of the luminaire in one or more time periods as defined by the Contracting Entity;
30. **Open-source software** means the computer software whose original code is available to all users who can change, alter and improve its contents.

31. **Public Lighting System** means the part of the Contracting Entity's overall public lighting system consisting of the parts, facilities, installations, equipment, and elements used for lighting of public areas and roads owned by the Contracting Entity which will be the object of implementation of the Measures for improving energy efficiency specified and additional non-energy services by the Project Scope (Annex 1 to the Contract). The Provider is responsible for the implementation of the Measures for improving energy efficiency only in the part defined by the Project Scope;
32. **Technical Requirements** are described in the annex to this Contract and represent an integral part of the Contract (Annex 3 to the Contract). The Technical Requirements prescribe the Contracting Entity's requirements related to the provision of all energy and non-energy services (implementation of designing activities, reconstruction and/or modernisation works and provision of services in the use phase) as well as the requested standards and their quality. The Technical Requirements prescribe the standards and quality of service provision. In case of failure to fulfill the Technical Requirements, the Fee is adjusted in order for it to reflect payment in accordance with the quality and scope of the provided service. Moreover, the fulfillment of the Technical Requirements represents a necessary precondition for the Adoption of the Measures for improving energy efficiency and additional non-energy services by the Contracting Entity;
33. **Contract** means this energy performance contract stipulated between the Contracting Entity and the Provider, which sets out the rights and obligations of the contracting parties;
34. **Contractual penalty** means the penalty prescribed by the Contract for the breach of Contract provisions as defined in Chapter 23 of the Contract and does not refer to the calculation of the Fee in accordance with the provisions of the articles under Chapter 18 of the Contract;
35. **Management & Control Centre** is the software solution used for the registration of all relevant parameters of the Public Lighting System as well as for control and management of the Public lighting System and Fee calculation in accordance with stipulations of this contract;
36. **Conditional Statement on the Adoption of the Measures for improving energy efficiency and additional non-energy services** means the conditional statement as defined by Article 10.1.8 of the Contract issued by the Contracting Entity to the Provider if during the audit and testing of the Public Lighting System smaller deficiencies in the performance of the Public Lighting System are determined (e.g. energy performance of the Public Lighting System is not entirely in line with the project, Technical Requirements, Tender, Main Project etc.) The deficiencies related to the lighting quality parameters or deficiencies which may jeopardise human life and health (of users, employees, maintenance workers) shall not be considered smaller deficiencies and if they are present, the Contracting Entity will not issue the Conditional Statement on the Adoption of the Measures for improving energy efficiency and additional non-energy services;
37. **Force majeure** means an unforeseeable extraordinary situation or an event out of control of the contracting parties which has taken place after the signing of the Contract whose procedure of resolving and effects are defined by Chapter 22 of this Contract;
38. **Guaranteed installed active power of the Public Lighting System** represents the sum of the Guaranteed installed active powers of all luminaires in the Public Lighting System within the scope of implementation of the Measures for improving energy efficiency of the Public Lighting System after the implementation of the Measures for improving energy efficiency of the Public Lighting System and it changes depending on the Dimming regime of each luminaire as defined by the Contracting Entity;
39. **Guaranteed installed active power of the luminaire** is the product of the Guaranteed normed active power of the luminaire and the Dimming regime of the luminaire expressed as a percentage and it is the sum of all Guaranteed installed powers of the luminaires within the scope of implementation of the Measures for improving energy efficiency of the Public Lighting System equal to the Guaranteed installed active power of the Public Lighting System;
40. **Guaranteed normed active power of the Public Lighting System** is the sum of the Guaranteed normed active powers of all luminaires within the scope of implementation of the Measures for improving energy efficiency of the Public Lighting System after the implementation of the Measures for improving energy efficiency of the Public Lighting System. The guaranteed normed

active power of the Public Lighting System is defined by the Tender, i.e. by the annex Fee Payment Plan and Savings Plan (Annex 8 to the Contract);

41. **Guaranteed normed active power of the luminaire** is the power of the luminaire where the luminaire meets the lighting quality requirements set out by Technical Requirements (Annex 3 of the Energy Performance Contract), which includes the power of the luminaire and all luminaire losses (lighting source, luminaire control gear) and which is increased by the savings achieved in the Designing Period in relation to the Tender based on the instructions stated in Technical Requirements (Annex 3 to the Energy Performance Contract);
42. **Guaranteed savings** means the difference between the Reference cost of the Public Lighting System before the implementation of the Measures for improving energy efficiency and the cost of the Public Lighting System after the implementation of the Measures for improving energy efficiency, defined by the annex Payment Plan and Savings Plan (Annex 8 to the Contract). Guaranteed savings do not include energy consumption of non-energy services;
43. **Lender** means the financial institution or institutions which stipulate a loan agreement with the Provider with the aim of financing the Project; Lenders are not considered third legal entities or natural persons in the context of interpretation of provisions of Chapter 12 of this Contract, i.e. interpretation of provisions of the loan agreement;
44. **Record on the executed works of reconstruction and/or modernisation** i.e. performed Measures for improving energy efficiency means the document in which, after the implementation of the Measures for improving energy efficiency, the results of testing, measurement and audit of the Public Lighting System are registered in accordance with the Technical Requirements (Annex 3 to the Contract);
45. **Record on the performed final audit** means the document drafted at the end of the Use Period, on the occasion of transfer of property rights over the elements, parts and equipment installed in line with the Measures for improving energy efficiency and additional non-energy services to the Contracting Entity, and according to the procedure described in Chapter 13.1 of the Contract. Record on the performed final audit will contain information on the condition of the Public Lighting System, condition of the parts, elements and equipment installed in line with the Measures for improving energy efficiency and additional non-energy services and on whether the Measures and additional non-energy services are in accordance with the Contract and the prescribed Technical Requirements (Annex 3 to the Contract).

Contents

PURPOSE AND SUBJECT OF THE CONTRACT

Subject of the Contract

The subject of this Contract is the provision of the Energy service and additional non-energy services (implementation of the energy efficiency project and other related activities) by implementing the Measures for improving energy efficiency of the Public Lighting System of the …… and implementation of additional non-energy services including the financing, Management & Control Centre implementation phase, Measures for improving energy efficiency and additional non-energy services designing phase, reconstruction and/or modernisation phase, Use phase, monitoring, measurement and verification, as well as the guaranteeing of the full functionality of the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services in line with all standards and requirements set out by this Contract and all its annexes, applicable regulations and subordinate legislation, Tender and professional standards during the whole term of the Contract.

The elements of the public lighting system not owned by the Contracting Entity that are used for providing the public lighting service cannot be a subject of this Contract. Moreover, the Public Lighting System maintenance and management are also not a subject of this Contract. The Contracting Entity will continue to maintain the public lighting system except that it will not maintain the equipment, parts and elements installed as part of the Measures for improving energy efficiency of the Public Lighting System and implementation of additional non-energy services considering the fact that the Provider guarantees their full and proper functioning during the whole term of this Contract in accordance with the Technical Requirements (Annex 3 to the Contract) and the Tender (Annex 6 to the Contract).

Purpose of the Contract

The main purpose of this Contract is the reduction of the installed power of the Public Lighting System, reduction of energy consumption, reduction of greenhouse gas emissions, limitation of light pollution, and the improvement and guaranteeing of the minimum and maximum level of illumination of public areas in accordance with the regulations in force of the …….

Additional purpose of this contract is to provide additional non-energy efficiency services to Contracting entity and to third parties on commercial and non-commercial basis (public services).

By this Contract, the Provider uses its skills and innovation in order to provide the Contracting Entity with an energy service by implementing and applying the Measures for improving energy efficiency of the Public Lighting System in a cost-efficient manner, simultaneously maintaining or increasing the current public lighting service and quality standard.

TERM OF THE CONTRACT

Term for which the Contract is stipulated

The Contract is stipulated for the term of ___ (_____) years from the Day of signing of this Contract and it includes, among others, the Phase of implementation of the Management & Control Centre (MCC), designing, reconstruction and/or modernisation, and use of Public Lighting System.

The Contract can be terminated before the expiry of the term described in Article 2.1.1 in the case and manner described in Chapter 24 of this Contract.

Design Phase deadlines

Deadlines for the execution of every phase of the Project referred to in paragraph 1 of this Article are indicated below:

a) **The Management & Control Centre Implementation Phase shall take __ (__) months**, i.e.:
   i. Deadline for the completion of MCC conceptual design is __ (___) months from the Date of signing of the Contract,
   ii. Deadline for the completion of Management & Control Centre Implementation Phase shall be __ (___) months from the Date of signing of the Contract,

b) **The Design Phase shall equal _ (___) months**.
The deadline for the completion of the Design Phase shall be __ (___) months from the Date of signing of the Contract;

c) **Reconstruction and/or Modernisation Phase shall take ___ (_____) months.** The deadline for the completion of Reconstruction and/or Modernisation Phase shall be ___ (_____) months from the Date of signing of the Contract;

d) **The Use Phase shall equal ____ (_____) years, i.e. ____ (_____) months.** The deadline for the completion of the Use Period (phase) is _____ (_____) years, i.e. _____ (_____) months from the Day of signing of this Contract;

The Use Phase shall begin on the Date of Adoption of the Measures for improving energy efficiency and additional non-energy services and shall last until the termination of this Contract. However, should the Provider fail to meet previous phases' deadlines, i.e. fail to meet the deadline for the completion of the Reconstruction and/or Modernisation Phase within the deadline referred to in the previous Article of this Contract, unless the failure is a consequence of force majeure or the Contracting Entity's or competent public institutions' deadlines, the Use Period (phase) is shortened for the number of months that the Provider was late to complete the Reconstruction and/or Modernisation Phase.

Should the Provider complete the Reconstruction and/or Modernisation Phase and obtain the Adoption of Measures for improving energy efficiency and additional non-energy services before the deadline referred to in Article 2.2.1, paragraph c), the Provider shall gain the right to be paid the Fee for the number of months for which it has obtained the Adoption of Measures for improving energy efficiency and additional non-energy services before the deadline referred to in Article 2.2.1, paragraph c). In that case, the Use Phase shall be prolonged for the number of months for which the Provider has obtained the Adoption of Measures for improving energy efficiency and additional non-energy services before the deadline referred to in Article 2.2.1, paragraph c). The term of the Contract shall not be changed in that case and it shall continue to equal _____ of the Date of signing of the Contract in accordance with Article 2.1.1 unless the Contract is terminated before its regular expiry in the manner described in Chapter 24 of this Contract.

ALLOCATION OF PROJECT RISKS BETWEEN CONTRACTING PARTIES

The allocation of Project risks between the contracting parties is defined by the provisions of this Contract that follow and by Annexes to this Contract.

1.1 Risks allocated to the Contracting Entity

The Contracting Entity takes over the risk of electrical energy price change, as well as the risks related to the maintenance of billing metering points (BMPs), poles and supply cables of the Public Lighting System and other parts and elements of the Public Lighting System that the Provider has not modernised, reconstructed or installed within the implemented Measures for improving energy efficiency and implementation of additional non-energy services. The Contracting Entity also takes over the risk of management (operating regime) of the Public Lighting System, which includes a difference in the Dimming regime in comparison to the regimes according to which the reference electricity consumption of the Public Lighting System has been defined in this Contract (Annex 2 of the Contract).

The Contracting Entity shall take over the risks of tax policy change in direct connection to the project such as the introduction of tax or other duties to be paid on luminaries or other elements and/or equipment installed within the Measures for improving energy efficiency of the Public Lighting System and implementation of additional non-energy services with exemption of risk related to commercial non-energy services (which is taken completely by Provider) that the Provider would be obliged to pay and payment of special taxes on the provision of energy service or non-commercial additional non-energy services etc. which, in the moment of signing of this Contract, were not familiar nor applicable.

Along with the basic risks referred to in the previous articles and other risks, obligations and responsibilities of the contracting parties defined by the provisions of this Contract that follow, the following risks are especially, without limitation, pointed out as risks allocated to the Contracting Entity:

- Risks related to the change of the requested technical standards and service quality;
- Risks related to the change of initial technical conditions by the Contracting Entity or third parties (e.g. change of the position of poles during the term of the Contract by the Contracting Entity or change of other conditions that have an influence on the designed lighting quality parameters which the Provider could not impact);
- Risks related to the increase of the project scope;
- Risks related to the changes of the Dimming regime of the Public Lighting System;
- Risks related to the illumination categorisation of areas and changes related thereto during the Term of the Contract;
- Risks related to illegal connections to the Public Lighting System and its illegal and unknown users;
- Risks related to Energy price;
- Risks related to tax policy changes (relates exclusively to VAT and changes to tax policy in direct relation to the project such as the introduction of tax or other duties on luminaires or other elements, parts and/or equipment used for public lighting);
- Risks related to distributor activities in the maintenance and management of the electrical grid and its components;
- Risks related to electrical energy supplier activities and electrical energy availability.
- Risks related to the change of location of luminaire installation in relation to the Project Scope (Annex 1 to the Contract) during or after the Reconstruction Period;

- Risks related to adding new luminaires in order to meet the requests of overall uniformity of road surface luminance and overall uniformity of illuminance on road area.

1.2 Risks allocated to the Provider

The Provider takes over the financial, technical, commercial and economic risks of the project implementation, as well as risks related to the insurance, functionality and proper functioning of the installed equipment, parts and elements within the Measures for improving energy efficiency of the Public Lighting System and implementation of additional non-energy services and risks related to change of electricity price in cases of fee adjustment due to the measurement of energy efficiency standards in accordance with Article 18.2.2. The Provider shall also take over the risks related to the compatibility of equipment, parts and elements installed as a part of Measures for improving energy efficiency and additional non-energy services with the existing Public Lighting System parts, elements and equipment, compatibility with the electricity distributor's network rules, as well as the risks related to the overvoltage protection of the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services as prescribed by the Technical Requirements (Annex 3 to the Contract).

The Provider shall take over the risks related to general changes to the tax policy (e.g. contributions and tax on income, profit, etc.)

Along with the basic risks referred to in the previous articles and other risks, obligations and responsibilities of the contracting parties defined by the provisions of this Contract that follow, the following risks are especially, without limitation, pointed out as risks allocated to the Provider:

- Risks related to the technical and functional condition of the Public Lighting System on the Date of signing of the Contract in relation to the fulfilment of Technical Requirements (Annex 3 to the Contract), Tender (Annex 6 to the Contract) and the Public Lighting System standards defined by this Contract, i.e. in relation to the possibilities and circumstances of implementation of the Measures for improving energy efficiency and implementation of additional non-energy services;
- Risks related to the drafting of the necessary design documentation, analyses and calculations of the technical and functional parameters of the Public Lighting System and the Measures for improving energy efficiency and additional non-energy services and their compliance with the standards and norms defined in the Technical Requirements (Annex 3 to the Contract) and the Tender;
- Risks related to the deadlines and costs in relation to works and activities of designing, reconstruction and/or modernisation of the Public Lighting System, i.e. Measures for improving energy efficiency of the Public Lighting System and implementation of additional non-energy services and the starting of its operation (this does not include the risks of exceeding the prescribed final deadlines for issue of approvals, certificates or permits by competent institutions and/or third parties in cases in which the Provider has delivered the proper and complete documentation);
- Risks related to the functionality and proper functioning of all elements, parts and equipment installed by the Provider under this Contract and as part of Measures for improving energy efficiency of the Public Lighting System and implementation of additional non-energy services during the whole term of this Contract;
- Risks related to compatibility/compliance of the newly installed and existing (kept) equipment, elements and parts of the Public Lighting System;

- Risks related to compatibility/compliance of the Measures for improving energy efficiency and additional non-energy services with supply cables, connections, equipment and technical and other rules and requirements of the electricity distributor;
- Risks related to the proper functioning of the Management & Control Centre;
- Risks related to the proper functioning and lighting, illumination and energy performance of all installed luminaries during the term of this Contract;
- Risks related to proper functioning of all elements and equipment used for provision of additional non-energy services;
- Risks related to the ensuring of financing of all project costs in all its phases during the whole project period, which includes the financing of all costs of designing, reconstruction and/or modernisation, testing of functionality, starting of operation, and costs of monitoring, measurement and verification of the Measures as well as cost of operation of additional non-energy services and financing of budget overruns related thereto;
- Risks related to the insurance of Measures for improving energy efficiency damages and additional non-energy services and damages to third parties caused by improper execution of reconstruction and/or modernisation works or inappropriate materials, elements and equipment installed within Measures for improving energy efficiency and additional non-energy services;
- Risks related to interest rate fluctuations on financial markets;
- Inflation risks;
- Risks related to changes of the overall tax policy (VAT excluded);
- Risks related to guarantees of the manufacturer of equipment, parts and elements used within Measures for improving energy efficiency of the Public Lighting System and implementation of additional non-energy services;
- Risks related to change of electricity price in case of non-fulfilment of the guaranteed savings and in case of additional commercial non-energy services;
- All Risks related to commercialisation of additional non-energy services which includes risks related to regulatory compliance, financing, costs, incomes, third party damage claims, etc.;
- Risks related to vandalism (property damage insurance policies);
- Risks related to the change of location of luminary installation in relation to the Project Scope (Annex 1 to the Contract) before the beginning of the Reconstruction Phase.

FINANCING AND REFINANCING

Financing of the Project

The Provider undertakes to fully finance all the necessary works and activities within the Project and the provision of all necessary materials and equipment in order to fulfil its obligations arising from this Contract.

For the financing of the Project, the Provider shall use own and/or other sources of financing.

If the Provider uses other sources of financing, it shall ensure that all financing agreements are compliant with the terms and conditions of this Contract and contain a clause which clearly states that the Lenders are fully aware of all provisions of this Contract, as well as of all contracting parties' obligations and risks.

Any provisions of financing agreements, annexes or appendices to financing agreement stipulated between the Provider and a third legal entity and/or natural person acting as Lender cannot and shall not increase or influence any of the Contracting Entity's responsibilities and obligations prescribed by the provisions of this Contract.

The responsibility for the structuring of loan/credit payback manner, loan/credit amount, amount of annual instalments, payback plan, and the Provider's capability to regularly fulfil its obligations towards third legal entities and/or natural persons acting as Lenders rests solely with the Provider and third legal entity and/or natural person acting as Lender, and with the same regards to all related risks. Therefore, the Contracting Entity shall not bear any responsibility towards any third legal entity and/or natural person acting as Lender in relation to the aforementioned issues.

Refinancing of the Project

Before the stipulation of any and all appendices to financing agreements entered into with third legal entities and/or natural persons, the Provider shall obtain the Contracting Entity's previous written approval thereof. The Contracting Entity's approval shall not be unduly denied. The Contracting Entity shall issue or deny to issue a written approval within 15 days of the day of receipt of the Provider's request for approval. If the Contracting Entity does not provide a reply within 15 days, it shall be considered that it has issued a previous written approval of the Provider's request.

The Contracting Entity's approval of amendments to agreements on Project financing, refinancing or reprogramming shall not in any way impact the Contracting Entity's responsibility towards any third legal entity and/or natural person acting as Lender for the Provider's obligations arising from such amendments.

The amendments to agreements on financing, refinancing or reprogramming of the remaining part of Project loan/credit debt which result in negative differences, i.e. increased Project costs, shall not in any way have an impact on the amount of Fee prescribed by the provisions of this Contract and they solely represent Provider's and Lender's risk.

The refinancing of the Project arising from co-financing or subsidising of the Project costs by competent institutions, funds or third parties shall result in the corresponding reduction of the contracted Fee and shall be used solely for the purpose of loan payback first and foremost to third legal entities and/or natural persons acting as Lenders. Loans will be paid in the manner

in which the senior debt shall be paid back first and only after its payback shall the subordinated debt and own investment be paid out.

The reduction of the Fee referred to in Article 4.2.4 in light of positive effects of co-financing or subsidising by competent institutions, funds or third parties shall be calculated based on the Investment Value (Annex 7 to the Contract) by calculating the maximum Fee reduction resulting in an equal internal rate of return on equity (profit) for the Provider defined in the Investment Value (Annex 7 to the Contract).

Each contracting party undertakes, as reasonable, to fulfil all necessary activities, requests, requirements and preconditions prescribed by institutions, funds or third parties on whose programmes a request for co-financing or subsidising of Project costs be submitted in such a way so as to maximise the possibilities of co-financing or subsidising which would result in the maximum Fee reduction.

CONTRACTING PARTIES' PROPERTY RIGHTS

Property

The public lighting system which is the subject of this Contract is owned by the Contracting Entity, and the Contracting Entity explicitly confirms this by signing this Contract, as well as the fact that in this regard, as far as the Contracting Entity is informed, there are no disputes with third parties.

The Provider exclusively reconstructs and/or modernises Public Lighting System elements, parts and equipment owned by the Contracting Entity, and for which elements of the Public Lighting System the Contracting Entity, by signing this Contract, gives the Provider its explicit approval authorising it to, during the whole term of this Contract, take all necessary activities in relation to the elements of the Public Lighting System in accordance with the provisions of this Contract, without the need to obtain any additional Contracting Entity's approval, except in relation to the activities for which such approval is explicitly prescribed by the provisions of this Contract.

In this Contract, the Provider invests into property which is in the Provider's own economic ownership and which serves for long-term income by providing services in accordance with the terms and conditions of this Contract.

The elements, parts and equipment installed by the Provider as part of Measures for improving energy efficiency and as a part of implementing additional non-energy services shall be considered Provider's property during the term of this Contract. In the moment of expiry or termination of this Contract, all these elements, parts and equipment shall become Contracting Entity's property without any fee in case of regular expiry of the Contract, i.e. with a fee defined by the provisions on early termination (early termination fee) of this Contract.

In this Contract, the Contracting Entity guarantees to the Provider unimpeded use of poles and other facilities which are not owned by the Contracting Entity and are used for the Public Lighting System and are exclusively related to the works that the Provider is obliged to execute in accordance with this Agreement.

Rights for commercialisation of the Public Lighting System infrastructure

The Provider does not have any right of commercialisation of the Public Lighting System nor of elements, parts and equipment installed as part of Measures for improving energy efficiency of the Public Lighting System during the Term of this Contract nor of the data collected within the Measures for the improvement of the energy efficiency of the Public Lighting System, except for those defined by this Contract, i.e. except for the provision of energy service and additional non-energy related services in accordance with the provisions of this Contract.

STATEMENTS AND OBLIGATIONS OF THE CONTRACTING PARTIES

Statements, guarantees and obligations of the Contracting Entity

By signing this Contract, the Contracting Entity states that it is the exclusive owner of the Public Lighting System described by the Annex 1 to this Contract. By signing this Contract, the Contracting Entity gives the Provider the right to use the Public Lighting System with the aim of Project realisation. This right shall remain in force until the Date of transfer of the Measures for improving the energy efficiency of the Public Lighting System and additional non-energy services. The Contracting Entity states and guarantees that there are no disputes regarding property rights over the Public Lighting System described in the Annex 1 to this Contract in front of any judicial or state bodies, and that there are no legal obstacles in the sense of legality of the Public Lighting System nor any requests by third legal entities and/or natural persons related thereto which would be known to the Contracting Entity in the moment of stipulation of this Contract.

By signing this Contract, the Contracting Entity states and guarantees that it is authorised to stipulate this Contract and that it has executed all previous actions and procedures necessary for legal and valid stipulation of this Contract.

The Contracting Entity states and guarantees that it has proceeded in accordance with the …… Act (Official Gazette no ……..), Regulation on contracting and implementation of energy services in the public sector (Official Gazette no ……..) and Public Procurement Act (Official Gazette no ……..).

The Contracting Entity states and guarantees that it will carry out all procedures and decisions necessary for the implementation of activities referred to in this Contract within reasonable deadlines (within deadlines set out by laws and regulations) without unnecessary delay.

The Contracting Entity is obligated to ensure unrestricted access to the Public Lighting System described in the Annex 1 to this Contract in order for the Provider to be able to freely fulfil all obligations arising from this Contract.

Statements, securities, guarantees and obligations of the Provider

By signing this Contract, the Provider guarantees and states that it possess all necessary permits, certificates and other approvals/consents necessary for the execution of all works and provision of all services which represent the subject of this Contract.

By signing this Contract, the Provider guarantees and undertakes to acquire all necessary licences, permits and all related rights to use and install all systems, equipment, elements, software and other parts of Measures for improving energy efficiency of the Public Lighting System and additional non-energy services which will be installed and used during the term of this Contract and guarantees and states that it shall be transferred to the Contracting Entity after the expiry or termination of this Contract for any reason whatsoever, without the right to payment of any fee, and for the purpose of its further use by the Contracting Entity, i.e. with a fee defined by the provisions on the termination of this Contract.

By signing this Contract, the Provider guarantees and states that it will execute all works and provide all services in accordance with all applicable regulations, professional standards and in line with the Plan of Implementation of the Measures for improving energy efficiency and

additional non-energy services (Annex 9 to the Contract) previously approved by / agreed with the Contracting Entity.

By signing this Contract, the Provider guarantees and states that it has the necessary resources, technical and technological capacity, legal capacity, i.e. knowledge and skills necessary for quality and timely fulfilment of all obligations stemming from this Contract.

By signing this Contract, the Provider guarantees and states that the lighting quality parameters and other technical parameters of the Public Lighting System which is the subject of this Contract, i.e. on which the Measures for improving energy efficiency have been implemented shall, constantly for the duration of this Contract, be in accordance with the required standards defined in the annex Technical Requirements (Annex 3 to the Contract) and the Tender (Annex 6 to the Contract) and therefore the Provider, by signing this Contract, takes over all responsibility towards third legal entities and/or natural persons for any possible damage caused by failure to act in accordance with the aforementioned obligation.

By signing this Contract, the Provider guarantees and states that all technical parameters and requirements of all installed parts and equipment used for delivering additional non-energy services shall, constantly for the duration of this Contract, be in accordance with the required standards defined in the annex Technical Requirements (Annex 3 to the Contract) and the Tender (Annex 6 to the Contract) and all applicable regulations and therefore the Provider, by signing this Contract, takes over all responsibility towards third legal entities and/or natural persons for any possible damage caused by failure to act in accordance with the aforementioned obligation.

By signing this Contract, the Provider guarantees and states that it is aware of all the risks that might arise from this Project and of the allocation of these risks in accordance with the provisions of this Contract.

By signing this Contract, the Provider guarantees and states that, in the framework of activities of reconstruction and/or modernisation and replacement of technically and functionally defective elements, parts and equipment of the Public Lighting System, i.e. that in the implementation of the Measures for improving energy efficiency and additional non-energy services it will install only new, technically and technologically functional equipment, elements and parts which have all valid certificates and attestations and for which reserve or spare parts can be acquired for at least 10 years from the day of Adoption of the Measures for improving energy efficiency and additional non-energy services, which the Provider will prove by a statement or guarantee as an annex to the Record on the executed works of reconstruction and/or modernisation.

By signing this Contract, the Provider guarantees and states that, during the term of this Contract, it shall guarantee the proper functioning of all parts, elements and equipment used and installed as part of the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services and that it especially guarantees the proper functioning of the installed luminaires, for which it shall enclose equipment manufacturer guarantees and guarantees that it will use his own assets to indemnify any damage caused by the failure to fulfil the obligations in relation to equipment manufacturer guarantees, i.e. undertakes to replace, within the prescribed deadline, every defect luminaire, part, element and equipment by a functioning one at its own expense.

PERIOD (PHASE) OF MCC IMPLEMENTATION

Procedures and activities during the Period of MCC Implementation

The Provider undertakes, as of the Day of signing of this Contract, to begin with the drafting of the Conceptual design of the Management & Control Centre (MCC), according to professional standards and all applicable regulations, the Tender (Annex 6 to the Contract) and Technical Requirements (Annex 3 to the Contract). The Provider undertakes to draft a conceptual design of the MCC which will fully satisfy all requirements, norms, specifications and quality prescribed by this Contract, especially by the Annex 3 Technical Requirements and other annexes to this Contract.

The Provider shall be responsible and be subject to the obligation to obtain all necessary approvals, licences, platforms and pay all costs possibly related thereto aimed at the realisation of the MCC in accordance with the provisions of this Contract. The Provider shall not have the right to claim these expenses from the Contracting Entity, considering that they have been included in the price of the Fee contracted by this Contract. The Contracting Entity undertakes to provide the Provider with all reasonable and necessary assistance in the procedures of obtaining approval from competent institutions.

The Provider undertakes to regularly, at least once a month, inform the Contracting Entity on the developments regarding the drafting of the conceptual design. The Contracting Entity shall have the right to inspect the course of developments during the whole MCC implementation phase.

The Provider shall enable the Contracting Entity to inspect the development of the Conceptual Design within 3 (three) days of receipt of a written request by the Contracting Entity.

Obtaining approval for MCC

The Provider shall submit and present the drafted MCC Conceptual Design to the Contracting Entity in order for the Contracting Entity to verify whether it has satisfied the requirements and standards prescribed by this Contract and Tender (Annex 6 to the Contract). The Provider shall not begin to programme and implement MCC before obtaining the Contracting Entity's approval of the Conceptual Design. In the event of dispute regarding the obtaining of the Contracting Entity's approval, the contracting parties shall resolve the dispute in accordance with Chapter 26 of this Contract (Dispute resolution and governing law).

The Contracting Entity's approval of the submitted Conceptual Design shall in no way increase the Contracting Entity's liability and/or result in the Contracting Entity taking over of any risks related to the proper functioning of the MCC. The Contracting Entity shall not unduly deny to approve the completed Conceptual Design, and it shall issue or deny approval along with a written explanation within 15 (fifteen) days of the day of receipt of the Conceptual Design from the Provider. If the Contracting Entity does not provide a reply within 15 days, it shall be considered that it has issued a previous written approval of the Provider's request.

The Provider shall be fully responsible for the compliance of the Management & Control Centre with the Contracting Entity's requests (Annex 3 Technical Requirements) during the whole term of the Contract. The Provider shall enable the Contracting Entity to test the MCC in order for the Contracting Entity to verify whether it has satisfied the requirements and standards prescribed

by this Contract, Tender (Annex 6 to the Contract) and the Concept Design from the implementation of the MCC until the end of the Reconstruction and/or Modernisation Phase.

The Contracting Entity's approval of the MCC shall in no way increase the Contracting Entity's responsibility and/or result in the Contracting Entity taking over any risks related to the proper functioning of the MCC or the data inserted into the MCC. The Contracting Entity shall not unduly deny to approve the MCC, and it shall issue or deny approval along with a written explanation within 30 (thirty) days of the day of receipt of the MCC from the Provider. If the Contracting Entity does not provide a reply within 30 days, it shall be considered that it has issued a previous written approval of the Provider's request.

MCC as the basic database

The Provider shall be responsible for regular updating and improving of the basic functionality of the MCC. The Provider shall also be responsible for keeping an electronic register (MCC) in relation to every single luminary, on all reconstruction and/or modernisation works and on faults which have been rectified and which appeared during the term of this Contract. All design documentation and all documents, certificates, licences, guarantees, securities etc. in relation to Public Lighting System elements and additional non-energy services, parts and equipment shall be contained in a digital form in the MCC and available to the Contracting Entity at any moment.

DESIGNING PHASE

Procedures and activities during the Designing Phase

The Provider undertakes, immediately after the Date of signing of the Contract, to begin with the drafting of the design documentation in relation to the Measures for improving energy efficiency of the Public Lighting System and implementation of additional non-energy services, according to professional standards and all applicable regulations, the Tender (Annex 6 to the Contract) and Technical Requirements (Annex 3 to the Contract). The Provider undertakes to draft design documentation in relation to the Measures for improving energy efficiency and additional non-energy services which will fully satisfy all requirements, norms, specifications and quality prescribed by this Contract, especially by the Annex 3 Technical Requirements and other annexes to this Contract.

The Provider shall be responsible and obligated to obtain all necessary permits and pay all fees, connection costs and other costs necessary for the realisation of the Project in accordance with the provisions of this Contract, i.e. for the implementation of the Measures and additional non-energy services. The Provider shall not have the right to claim these expenses from the Contracting Entity, considering that they have been included in the price of the Fee contracted by this Contract. The Contracting Entity undertakes to provide the Provider with all reasonable and necessary assistance in the procedures of obtaining permits and/or approval from competent institutions.

The Provider undertakes to regularly, at least once a month, inform the Contracting Entity on the developments regarding the drafting of the design documentation. The Contracting Entity shall have the right to inspect the course of drafting of the design documentation during the whole Designing Phase.

The Provider shall enable the Contracting Entity to inspect the development of the design documentation within 3 (three) days of receipt of a written request by the Contracting Entity.

The Provider shall entrust the drafting of the design documentation to authorised designers who have the necessary experience in the drafting of the design documentation in relation to the construction, reconstruction and/or modernisation of the Public Lighting System and with implementation of Smart city services.

Obtaining approval of design documentation

The Provider shall submit the drafted design documentation to the Contracting Entity in order for the Contracting Entity to verify whether it has satisfied the requirements and standards prescribed by this Contract, Tender (Annex 6 to the Contract) and eventually requirements and standards prescribed by institutions and funds competent for Project co-financing if that was to be the case. The Provider shall not submit requests for the issue of any permits and/or approvals, insert static data from the design documentation to the MCC, nor begin with the reconstruction and/or modernisation works before obtaining the Contracting Entity's approval. In the event of dispute regarding the obtaining of the Contracting Entity's approval, the contracting parties shall resolve the dispute in accordance with Chapter 26 of this Contract (Dispute resolution and governing law).

The Contracting Entity's approval of the submitted design documentation shall in no way increase the Contracting Entity's responsibility and/or result in the Contracting Entity taking over any risks related to the accuracy of the design documentation. The Contracting Entity

shall not unduly deny to approve the completed design documentation, and it shall issue or deny approval along with a written explanation within 15 (fifteen) days of the day of receipt of the design documentation from the Provider. If the Contracting Entity does not provide a reply within 15 days, it shall be considered that it has issued a previous written approval of the Provider's request.

The Provider shall be fully responsible for the accuracy and comprehensiveness of the design documentation in relation to the reconstruction and/or modernisation of the Public Lighting System, i.e. Measures for improving energy efficiency of the Public Lighting System and implementation of additional non-energy services. The Provider shall be obliged to examine all existing design documentation (database containing all elements of the Public Lighting System (GIS system etc.) received by the Contracting Entity and update it in line with the actual state of the Public Lighting System. The Provider shall not be responsible for possible time extensions relative to the issue of necessary permits by competent bodies if it has submitted comprehensive and accurate documentation to the competent bodies. The Contracting Entity shall take over the risk of missing deadlines in cases in which the Provider has delivered/submitted comprehensive and accurate documentation for approval, consent or issue of permits, in which competent services and departments have delivered the approval after the prescribed maximum legal term or within more than 30 (thirty) days.

MCC as the basic database

The Provider shall be responsible for regular updating of design documentation (database with all elements of the Measures for improving energy efficiency of the Public Lighting System and of additional non-energy services etc.) and in every moment during the term of this Contract, it shall have a copy of the consolidated version of the last state of the design documentation, i.e. last as-built state in a written and electronic form (archived in the MCC) in relation to the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services. The Provider shall also be responsible for keeping an electronic register (in the MCC) in relation to every single luminaire, on all reconstruction and/or modernisation works and on faults which have been rectified and which appeared during the term of this Contract as well as all record on other equipment used for provision of additional non-energy services. All design documentation and all documents, certificates, licenses, guarantees, securities etc. in relation to elements, parts and equipment of the Public Lighting System shall be submitted to the Contracting Entity on the day of expiry or termination of this Contract for any reason whatsoever, without the right to payment of any pertinent fee, in the written and electronic form (in the MCC), excluding the fee defined by the provision on termination of this Contract.

RECONSTRUCTION AND/OR MODERNISATION PHASE

Procedures and activities during the Reconstruction and/or Modernisation Phase

Following the issue of the approval of the design documentation by the Contracting Entity, the insertion of all relevant static data referred to in the design documentation into the MCC and the obtaining all necessary permits and approval from other competent institutions and third legal entities and/or natural persons, the Provider shall begin the reconstruction and/or modernisation works of the Public Lighting System in accordance with the completed design documentation, Plan of Implementation of the Measures for improving energy efficiency and additional non-energy services (Annex 9 to the Contract), applicable regulations, Technical Requirements (Annex 3 to the Contract) and the Tender (Annex 6 to the Contract). The Provider shall act in the capacity of investor and shall fulfil all legal obligations of the investor, as well as ensure professional supervision over the execution of works and fully cover the related costs.

The Provider shall execute all other work on the Public Lighting System not foreseen by the design documentation (related to the implementation of the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services) in case of such a need, in order to ensure that all elements and parts of the system are stable, functioning, safe, properly fixed and secured (regards parts, elements and equipment installed within the scope of the Measures for improving energy efficiency of the Public Lighting System and implementation of additional non-energy services). The cost of execution of all these works has been included in the amount of the Fee referred to in Article 18.1.2 and the Provider is responsible for the state of parts, elements and equipment installed within the scope of the Measures for improving energy efficiency of the Public Lighting System and implementation of additional non-energy services during the whole term of this Contract.

The Provider shall have the obligation and responsibility to implement all measures of protection of workers, passers-by and third legal entities and/or natural persons in line with all professional rules and standards, applicable regulations and according to the best practices in relation to the execution of reconstruction and/or modernisation works in the places of work. The Provider shall be entirely responsible for any harm to health, safety and property of the workers, passers-by, or any third legal entities and/or natural persons during the execution of reconstruction works. The Contracting Entity shall in no way be responsible for works and security measures to be executed by the Provider in accordance with this Contract.

The Provider shall execute the works of reconstruction and/or modernisation of the Public Lighting System in line with the following guidelines:

a) All reconstruction and/or modernisation works, and the installed elements, parts and equipment need to be in accordance with the applicable regulations of the Republic of Croatia, Technical Requirements (Annex 3 to the Contract), Tender (Annex 6 to the Contract), professional rules and applicable standards;
b) All reconstruction and/or modernisation works, and the installed equipment and elements need to be functionally aligned with the existing installations/devices/equipment;
c) All reconstruction and/or modernisation works, and the installed equipment and elements need to be functionally aligned with the technical requirements of the distribution system operator;
d) All reconstruction and/or modernisation works, and the installed equipment and elements need to be aligned with the investments foreseen by the Tender (Annex 6 to the Contract) and the Plan of Implementation of the Measures for improving energy efficiency and additional non-energy services (Annex 9 to the Contract);

e) All reconstruction and/or modernisation works need to be executed in the manner guaranteeing quality and proper functioning of the Public Lighting System and additional non-energy services without latent defects/errors;
f) All reconstruction and/or modernisation works need to be registered in the MCC;
g) The execution of all reconstruction and/or modernisation works, as well as all related Provider's activities need to be executed in the manner that Public Lighting System users are not limited in using it longer than absolutely necessary.

In case of necessity and if prescribed by requirements of bodies/institutions responsible for co-financing and/or subsidising the Project, the Provider shall, without fee, forward to the Contracting Entity drafted design documentation, as well as pertinent annexes, bases, blueprints and calculations, in the paper and electronic form, and provide the Contracting Entity with reasonable assistance in order for the Contracting Entity to prepare all necessary documentation and in order for it to fulfil all criteria of these bodies/institutions, with the aim of maximum use of co-financing and subsidising possibilities.

Right to Contracting Entity's supervision of execution of reconstruction and/or modernisation works

The Contracting Entity shall have the right, via the Contracting Entity's Authorised Representative, to regularly supervise and control the dynamics of execution of reconstruction and/or modernisation works and participate in meetings and regular coordination between the Provider and subcontractors. The Contracting Entity's Authorised Representative shall not be considered professional supervisor referred to in the Building Act, but the Contracting Entity's representative for supervision and control of execution of this Contract.

The Contracting Entity's Authorised Representative shall warn the Provider in writing of any determined deficiencies in the execution of reconstruction and/or modernisation works or if the elements, parts and equipment installed do not satisfy the required quality or standards.

The Provider shall rectify the determined deficiencies as soon as possible and at the latest within the deadline for the completion of the Reconstruction and/or Modernisation Phase, and inform the Contracting Entity thereon in writing. Should the Provider not agree with the Contracting Entity's Authorised Representative and consider that there are no deficiencies indicated by the Contracting Entity's Authorised Representative, it shall state its position in writing and the issue shall be dealt with according to the procedures defined in Chapter 26 of this Contract (Dispute resolution).

The Provider shall be entirely responsible for the proper functioning and quality of the executed works and activities, as well as for the proper functioning, functionality and quality of all installed elements, parts and equipment during the whole term of this Contract regardless of the control and supervision by the Contracting Entity's Authorised Representative. The Provider's responsibility for the proper functioning, legality, functionality and execution of the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services cannot and shall not in any way be excluded and/or reduced.

Disposal and storage of defective and/or replaced elements, parts and equipment and proceeding pursuant to environmental protection requirements

The Provider is authorised by the Contracting Entity and shall, at its own expense, carry out dismantle, storage and disposal of elements, parts and equipment of the Public Lighting System and all types of materials which are defect/damaged or replaced during the Reconstruction and/or

Modernisation Phase in accordance with all applicable regulations on the storage and disposal of hazardous and other waste and shall proceed in accordance with all environmental protection requirements, as well as requirements set out by other applicable regulations.

The Provider shall submit a query to the Contracting Entity before beginning reconstruction and/or modernisation works on the need of transport of dismantled parts, elements and equipment of the Public Lighting System to a certain disposal or storage site specified by the Contracting Entity in order for the Contracting Entity to continue to use it. The distance of the disposal or storage specified by the Contracting Entity should not exceed 25 kilometres out of the Contracting Entity's administrative borders. Should the Contracting Entity not provide a reply within 15 (fifteen) days from the day of receipt of the Provider's query, it shall be considered that the Contracting Entity does not have a need for further use of dismantled elements, parts or equipment of the Public Lighting System and the Provider shall dispose of them in line with regulations in force. The Provider shall dispose of all dismantled Public Lighting System elements, parts and equipment at its own expense in accordance with all applicable regulations and rules.

The Provider shall also apply all rules related to protection at the workplace and protection of health and safety of all workers and, if applicable, third parties involved in the procedure of safe dismantling, storage and disposal of hazardous and other waste.

FINISHING OF RECONSTRUCTION AND/OR MODERNISATION WORKS AND ADOPTION OF THE MEASURES FOR IMPROVING ENERGY EFFICIENCY OF THE PUBLIC LIGHTING SYSTEM AND ADDITIONAL NON-ENERGY SERVICES

After finishing all works and activities of reconstruction and/or modernisation of the Public Lighting System, i.e. implementation of Measures for improving energy efficiency of the Public Lighting System and additional non-energy services, the Provider shall inform the Contracting Entity that it has executed all works in accordance with the Plan of Implementation of Measures and additional non-energy services (Annex 9 to the Contract), Technical Requirements (Annex 3 to the Contract) and the Tender (Annex 6 to the Contract), as well as other requirements of the Contracting Entity and it shall inform the Contracting Entity in writing on the date and time of testing of the Public Lighting System and additional non-energy services.

The Provider and the Contracting Entity shall be present at the testing of the Public Lighting System and additional non-energy services which will be carried out by a technically capable authorised expert engaged at the Contracting Entity's cost. Testing shall be carried out according to the instructions defined in the Annex 3 (Technical Requirements). The Provider shall have the right to engage additional experts at its own expense who would supervise the testing carried out by persons selected by the Contracting Entity and, if necessary, carry out own tests in the presence of the Contracting Entity.

The Public Lighting System and additional non-energy services shall be tested in order to determine whether it is functional and that the works and installed equipment have been carried out in accordance with the Contracting Entity's requirements listed in the Technical Requirements (Annex 3 to the Contract), as well as in line with the technical details referred to in the Provider's Tender. For that purpose, the active power of all luminaires shall be measured in the scope of implementation of the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services in order to determine whether it is smaller or equal to the Guaranteed normed active power of the Public Lighting System and measurements of lighting quality parameters of the Public Lighting System i.e. verification whether the minimum lighting quality requirements have been satisfied, as defined in the Technical Requirements (Annex 3 to the Contract) and the Tender (Annex 6 to the Contract). All measurements and tests will take place in line with the requirements and the procedure defined in the Technical Requirements (Annex 3 to the Contract) and Monitoring, Measurement and Verification Plan (Annex 4 to the Contract).

Along with the tests of Public Lighting System and additional non-energy services, the Provider and the Contracting Entity shall inspect the Public Lighting System and additional non-energy services in order to determine whether the Public Lighting System has been reconstructed and/or modernised, i.e. whether the Measures for improving energy efficiency and implementation of additional non-energy services have been carried out according to the Contracting Entity's requirements referred to in the Technical Requirements and the Tender, and whether all elements function properly and are safe to use.

After the tests and inspection of the Public Lighting System and additional non-energy services have been carried out, the Provider shall draft the Record on the executed works of reconstruction and/or modernisation.

The Record on the executed works of reconstruction and/or modernisation of public lighting and implementation of additional non-energy services shall be drafted in the form and contents

referred to in Annex 3 (Technical Requirements) and Annex 5 (Report Content). The Record on the executed works of reconstruction and/or modernisation shall contain the Statement on the executed works, final report by the principal supervising engineer (obligatory), record on the performed lighting quality parameters and energy measurements, as well as record on the performed tests of electrical installations and test of functionality of additional non-energy services. The Provider is obliged to enclose the copies of all attestations (certificates), test reports and proofs on the installed equipment, parts and elements in accordance with the Technical Requirements (Annex 3 to the Contract).

The Contracting Entity shall perform the verification of the performed works, tests and measurements, as well as of the Record on the performed works of reconstruction and/or modernisation of public lighting and additional non-energy services, and within 30 (thirty) days of the day of submission of the Record, it shall, in writing, accept the Measures for improving energy efficiency and additional non-energy services if the conditions defined by the annex Technical Requirements (Annex 3 to the Contract) and the Tender (Annex 6 to the Contract) have been satisfied.

Should the verification and testing show that the Public Lighting System or additional non-energy services are functional, but that additional works and/or materials are needed in order to fully satisfy the defined requirements, the Contracting Entity shall in writing warn the Provider thereon with the Conditional Statement on the Adoption of the Measures for improving energy efficiency and additional non-energy services. The Use Period shall begin in the moment of issue of the notification containing Conditional Statement on the Adoption of the Measures for improving energy efficiency and additional non-energy services, i.e. first calendar day of the next calendar month after the issue of the notification containing Conditional Statement on the Adoption of the Measures for improving energy efficiency and additional non-energy services. Moreover, by the issue of the notification containing Conditional Statement on the Adoption of the Measures for improving energy efficiency and additional non-energy services, the time limit that the Contracting Entity will specify in the pertinent notification shall begin to run, within which the Provider shall be obliged to fully rectify all smaller deficiencies. The aforementioned deadline within which the Provider shall be obliged to fully rectify all smaller deficiencies should not surpass 3 (three) months.

The Contracting Entity shall confirm the Adoption of Measures for improving energy efficiency and additional non-energy services and the cumulative fulfilment of all aforementioned conditions defined by this Contract and the Annex Technical Requirements in writing. The Use Period shall begin to run from the moment of issue of a written notification on the Adoption of Measures for improving energy efficiency and additional non-energy services, i.e. Day of the Adoption of Measures for improving energy efficiency and additional non-energy services, which is considered to be the first calendar day of the calendar month that follows the issue of the written notification on the Adoption of Measures for improving energy efficiency and additional non-energy services and the Contracting Entity undertakes to pay the Provider the Fee for the services provided in accordance with the provisions of this Contract. The Day of the Adoption of Measures for the improvement of energy efficiency and additional non-energy services shall be recorded in the MMC and from that day the measuring and verification of all contractual standards shall begin, i.e. the availability analysis and the fee calculation (done automatically via MMC).

The Contracting Entity can also conditionally accept the executed works, i.e. issue the Conditional Statement on the Adoption of the Measures for improving energy efficiency and additional non-energy services if during the verification and testing of the Public Lighting System smaller deficiencies in the executed works or performance of the Public Lighting System have been

determined. However, the full satisfaction of the requested lighting quality requirements and functionality of additional non-energy services, i.e. illumination and safety standards, as well as energy efficiency standards of the Public Lighting System prescribed by the Technical Requirements shall be considered the minimum requirement for the issue of the Conditional Statement on the Adoption of the Measures for improving energy efficiency and additional non-energy services.

Should the Contracting Entity issue the Conditional Statement on the Adoption of the Measures for improving energy efficiency and additional non-energy services, it shall indicate the smaller deficiencies due to which the Conditional Statement has been issued and set a reasonable deadline within which the Provider shall rectify them in order to obtain the final statement on the Adoption of the Measures for improving energy efficiency and additional non-energy services. The Provider shall have the right to collect the Fee from the day of issue of the Conditional Statement on the Adoption of the Measures for improving energy efficiency and additional non-energy services (i.e. first calendar day of the calendar month following the issue of the Conditional Statement on the Adoption of the Measures for improving energy efficiency and additional non-energy services) however, should it not rectify the smaller deficiencies until the deadline set out by the Contracting Entity in the written statement, the Contracting Entity shall calculate the Contractual Penalty from the planned day of completion of the reconstruction and/or modernisation works until the day on which the Provider fully rectifies the deficiencies.

Should the Provider not rectify the smaller deficiencies in the defined final deadline for the completion of works defined in Article 24.2.1 paragraph g), the Contracting Entity shall have the right to terminate this Contract due to the Provider’s fault, collect the Contractual Penalty and collect the performance Guarantee in the case of breach of contractual obligations within the MMC Implementation Phase, Designing Phase and the Reconstruction and/or Modernisation Phase referred to in Article 19.1.1. In case of dispute between the contracting parties on whether the smaller deficiencies have been rectified, it shall be settled in accordance with the Chapter 26 of the Contract.

USE PHASE

Service provision

The Use Phase shall begin to run in the moment of the issue of the written notification of the Contracting Entity on the Adoption of the Measures for improving energy efficiency and additional non-energy services, i.e. Day of the Adoption of the Measures for improving energy efficiency and additional non-energy services. During the whole period of the Use Phase, the Provider has the obligation to provide all services in accordance with all provisions of this Contract, all applicable laws and regulations, professional and expert standards and in line with the Technical Requirements (Annex 3 to the Contract) and the Tender (Annex 6 to the Contract).

The Provider shall regularly monitor and, if necessary, improve the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services and shall guarantee the proper functioning and functionality of all elements, parts and equipment (luminaries etc.) installed in the framework of the implemented Measures for improving energy efficiency of the Public Lighting System and additional non-energy services. Should the elements, parts or equipment be dysfunctional or defective (luminaries etc.) and not in line with the Technical Requirements (Annex 3 to the Contract) and the Tender (Annex 6 to the Contract), the Provider shall replace them with functioning ones which satisfy all the aforementioned conditions at the latest within the deadline defined by the Technical requirements (Annex 3 to the Contract) from the day of reporting of the fault, i.e. deficiency or malfunction of any element, part or equipment (e.g. luminary) . Any fault, i.e. deficiency or malfunction shall be automatically registered in the Management & Control Centre (MCC). Should the Provider not replace the defect and/or non-functional element, part or equipment (e.g. luminary) within the aforementioned deadline or fail to register the defect and/or non-functional element in the MCC, the reduction of the Fee shall be calculated in accordance with the provisions of this Contract.

During the term of this Contract, energy savings shall be regularly monitored, measured and verified in line with the Monitoring, Measurement and Verification Plan (Annex 4 to the Contract), which shall represent one of the bases for payment, i.e. calculation of the Fee.

Maintenance of the Public Lighting System

During the term of this Contract, the Contracting Entity shall be obliged to maintain the Public Lighting System in line with professional standards and rules and in accordance with all applicable regulations. The Contracting Entity shall be obliged to maintain all parts, elements and equipment of the Public Lighting System not installed within the framework of reconstruction and/or modernisation, i.e. framework of the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services by the Provider. By signing this Contract, the Provider guarantees and undertakes that all elements, parts and equipment installed within the Measures for improving energy efficiency and additional non-energy services will be maintained regularly and entirely functional and proper during the whole term of this Contract and that the Contracting Entity will not bear any expenses related to the maintenance of parts, elements and equipment installed within the framework of Measures for improving energy efficiency during the term of this Contract.

The Provider shall not be obliged to maintain the lighting poles, foundations and cables used for the Public Lighting System (regardless of whether they are owned by the Contracting Entity) if they were not in scope of the project, i.e. in scope of Measures for improving energy efficiency

and additional non-energy services. Should the lighting poles be replaced, calling for the dismantle and re-installation of luminaries installed within the framework of the Measures for improving energy efficiency and additional non-energy services by the Provider, the Contracting Entity shall use the MCC to inform the Provider in writing / by e-mail on its intention to replace the poles and ensure that the Provider be present and, if necessary, take part in the dismantle and second installation of luminaries and equipment for additional non - energy services on new poles. If the Provider is not informed on the dismantle and second installation of luminaries on new poles at least 3 days before the commencement of works, the risk of damage to the equipment, parts and elements which are inherent to the Measures for improving energy efficiency and additional non-energy services will be regarded as the Contracting Entity's risk and not as a Provider's risk. If the Provider is informed thereon at least 3 days before the commencement of works but it is not present during the installation and dismantle of its own will, the Provider shall bear all risks of damage arising from these activities.

If, due to non-maintenance, improper execution of works of the Public Lighting System maintenance or any other related negligence, parts, elements or equipment installed by the Provider within the scope of the Measures for improving energy efficiency of the Public Lighting System and implementation of additional non-energy services should be damaged, this shall constitute a risk of the Contracting Entity, which shall also bear the expenses of repair of the damaged elements, parts or equipment.

The Provider shall ensure the proper functioning of the parts, elements and equipment installed within the scope of the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services during the term of this Contract and shall bear the risk and expenses of rectification of all deficiencies related thereto, i.e. their replacement with properly functioning equipment, parts or elements, except in the case in which the error, damage or malfunction is a direct consequence of acts or negligence / failure to act by the Contracting Entity or third parties related to the Contracting Entity. Considering that the Provider guarantees for the proper functioning of the parts, elements and equipment (e.g. luminaries) during the term of this Contract, the Provider shall be obliged (and bear the expenses) to rectify the non-functional, defective parts, elements, equipment and those parts, elements and equipment which do not satisfy the Technical Requirements of this Contract and which have been installed within the scope of the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services.

The Provider shall be responsible for the protection of all parts, elements and equipment (e.g. luminaries) installed in the framework of the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services against lightning strikes and other disturbances in the part of the public lighting system within the scope of implementation of the Measures for improving energy efficiency and additional non-energy services in accordance with the Technical Requirements (Annex 3 to the Contract). The Provider shall take over the risk of failures of the installed equipment caused by lightning strikes (lightning strikes are not considered force majeure). Therefore, the Provider is free to optimise protection from voltage surges. The Provider shall replace all parts, elements and equipment (luminaries etc.) damaged on the occasion of such events with functioning parts, elements and equipment within the deadlines prescribed by this Contract, defined by the Technical Requirements (Annex 3 to the Contract). The Provider shall not be responsible for overvoltage protection of the Public Lighting System not contained within the scope of the Measures for improving energy efficiency and additional non-energy services and which represents an obligation of the electricity distributor, i.e. Contracting Entity, and shall not be obliged to rectify parts, elements and equipment of the Public Lighting System due to such events, but it shall

represent an obligation of the Contracting Entity. The Provider shall obtain insurance policies covering all equipment installed within the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services against lightning strikes, which shall be used for the remediation of the damage.

The Provider shall respect all rulebooks and rules of the electricity distributor during the provision of the service of monitoring the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services and in the occasion of fulfilment of other obligations arising from this Contract, if there are any, and take over all possible related expenses (e.g. expenses of supervision of electricity distributor workers during the activities of replacement of the malfunctioning luminaries and other related equipment etc.).

The Provider shall ensure that all parts, elements and equipment installed in the Public Lighting System within the scope of the Measures for improving energy efficiency and additional non-energy services be new, in line with the certificates and requirements of the manufacturer of other equipment and elements of the Public Lighting System, to be compatible with the Public Lighting System and to be entirely in line with requirements contained in all guarantees and to have all valid certificates and attestations.

The Provider shall take over the full responsibility and all expenses related to the execution of works for which it is responsible and which it is obliged to execute, as well as to the provision of services which includes all risks related thereto and it takes over the obligation to execute them without diminishing the safety of traffic and passers-by. The Provider shall execute all works with maximum protection of the workers and other persons who could potentially be in danger.

The Contracting Entity shall cooperate with the Provider during the whole term of the Contract in order to facilitate the execution of all works by coordination with the Provider in all activities related to the Public Lighting System, which especially regards the regulation of traffic (at the Provider's expense) and traffic safety. The Provider shall deliver detailed plans of execution of the activity of replacement of worn-out or malfunctioning elements and organise them in the manner that it does not obstruct, or only minimally obstructs the regular and normal functioning of the Contracting Entity's activities and of traffic in the area covered by the Public Lighting System.

The Public Lighting System Management

Before the commencement of the Reconstruction and/or Modernisation Phase, the Provider shall present the MCC and train the Contracting Entity on how to use it. Along with training, the Provider shall provide the Contracting Entity with a written manual on how to use the MCC in the Contracting Entity's native language.

The Contracting Entity will manage the Public Lighting System also via the Management & Control Centre in accordance with the Technical Requirements (Annex 3 to the Contract).

The Contracting Entity reserves the right to change the operating regime and Dimming regime of the Public Lighting System during the term of this Contract in accordance with own needs and within the legal framework. The change of the operating regime and Dimming regime of the Public Lighting System will also be possible via the MCC.

The Provider shall ensure the proper and uninterrupted functioning of the MCC, i.e. continuous functioning during the whole term of the Contract in accordance with Annex 3 (Technical Requirements) and shall take over all risks related thereto.

The Provider shall take over the risk in relation to the proper functioning of the parts, elements and equipment installed within the scope of implementation of the Measures for improving energy efficiency of public lighting up to the maximum number of operational hours of the Public Lighting System which is defined as 5,000 operational hours of the public lighting system (luminaires) per contract year, i.e. 75,000 operational hours during the term of this Contract, and up to the luminaire driver output current of 750 mA.

RIGHTS AND OBLIGATIONS OF THE CONTRACTING ENTITY AND PROVIDER IN RELATION TO SUBCONTRACTORS, THIRD LEGAL ENTITIES AND THIRD NATURAL PERSONS (needs to be adapted to specific national regulations)

The subcontractor is an economic operator which delivers goods, provides services or executes works directly related to the subject of procurement for the Provider, in accordance with Article 3 of the Public Procurement Act shall apply. Participation of Subcontractors does not impact on the Provider's responsibility to execute this Contract.

Data on the appointed subcontractors:

Subcontractor _____ (indicate: name, registered office, OIB or national identity number, account number, subcontractor's legal representatives) and parts of the Contract that the Subcontractor shall execute _____ (indicate: subject or quantity, value or percentage).

In the execution of this Contract in relation to the Subcontractors, the provisions of Articles 224 and 225 of the Public Procurement Act and the provisions of Point 4.4. of the Tender Documentation (provisions on the Subcontractor change, introduction of one or more new Subcontractors, taking over the execution of a part of the Contract etc.) and other applicable provisions on subcontractors contained in the Tender Documentation shall apply.

The Provider shall, in all agreements with third legal entities and/or natural persons, include provisions ensuring that:

a) term of agreement between the Provider and third legal entities and/or natural persons is no longer that the term of this Contract;
b) agreements between the Provider and third legal entities and/or natural persons contain a provision by which they are automatically terminated in case of termination of this Contract for any reason whatsoever;
c) agreements between the Provider and third legal entities and/or natural persons contain provisions clearly stating that the responsibility of the Provider towards third legal entities and/or natural persons is not transferable to the Contracting Entity, i.e. that third legal entities and/or natural persons cannot claim damages from the Contracting Entity in any case;
d) agreements between the Provider and third legal entities and/or natural persons clearly state that the elements, materials and equipment inherent to the Public Lighting System, i.e. elements, materials and equipment installed within the scope of the Measures for improving energy efficiency cannot be used as a guarantee and that they are not and shall not be the subject of distraint;
e) agreements contain a provision by which third legal entities and/or natural persons confirm that they are aware of the provisions of this Contract and that they entirely understand the rights and obligations arising therefrom, and that the Contracting Entity shall not bear any responsibility towards them;
f) third legal entities and/or natural persons can only ask the Provider or legal entities and/or natural persons with which the Provider has close links for protection of their rights.

The Provider shall bear full responsibility and risks in relation to third legal entities and/or natural-persons and contractual relations with them, and therefore the Contracting Entity shall in no

way be responsible for any damage and consequences which may arise from such contractual relations.

In all agreements with third legal entities and/or natural persons, the Provider shall include a provision by which the third legal entity and/or natural person shall not have the right to an early termination fee in case of early termination of the agreement for any reason whatsoever.

Due to the specific prerequisites for realisation of this Contract, its long term, manner of financing and risk-taking by the Provider of services, the Contracting Entity shall not be obliged to pay the Subcontractor directly for the part of the Contract that the Subcontractor has executed. Justified reasons for acting so, related to the nature of this Contract, are the following:

- In accordance with Article 4, paragraph 2, point 61 Energy Efficiency Act, an energy performance contract is a contract between the user and provider of energy services, verified and monitored during its whole term, in which the investments into works, equipment and services for the implementation of measures for improving energy efficiency covered by the energy service is repaid according to the contracted level of energy efficiency improvement or other contracted criteria, such as financial savings;
- In accordance with Article 26 Energy Efficiency Act, *inter alia*, by an energy performance contract, the provider of the energy service undertakes to, for the purchaser of the energy service, partly or entirely by own funds, implement the measures which bring about energy savings in relation to the reference energy consumption, and the purchaser undertakes to pay a fee to the provider of energy service by funds arising from energy savings which are a consequence of investments by the energy service provider;
- The provisions of Chapter 4 of the Contract (Financing and re-financing), which is an integral part of the Tender Documentation, state that the service Provider undertakes to fully finance all necessary works and activities within the Project and the provision of all necessary materials and equipment in order to fulfil its obligations arising from this Contract;
- The provisions of Chapter 18 of the Contract (Fee for the Provided Service), which is an integral part of the Tender Documentation, state that on the day of signing of the Contract, the Period of Provision of Designing Services and the execution of reconstruction and/or modernisation of the Public Lighting System, i.e. Measures for improving energy efficiency of the Public Lighting System begins to run.

The Provider acquires the right to be paid the Fee for the Provided Services only following the Adoption of the Measures for improving energy efficiency and additional non-energy services, i.e. beginning of the Use Phase. The Use Phase marks the beginning of energy service provision and by the expiry of the first month of energy service provision, the Provider acquires the right to collect the fee for the provided services from the Contracting Entity. The fee represents the monthly cost of the provided service. The fee shall be paid on a monthly basis during the term of the Contract. Every month, the Contracting Entity shall pay the Fee (N) calculated according to Article 18.1.5 of the Contract to the Provider. The Provider shall calculate the corresponding VAT to the Fee calculated in such manner. In order to pay the Fee, the Provider shall deliver the invoice to the Contracting Entity by the tenth day of each month for the previous month, which the Contracting Entity shall pay within 60 (sixty days) of the day of invoice receipt.

Failure to observe the provisions of Chapter 12 of this Contract by the Provider shall represent a serious violation of the provisions of this Contract and in that case, the Contracting Entity shall have the right to terminate the Contract due to the Provider's fault.

REGULAR CONTRACT EXPIRY AND TRANSFER OF PROPERTY RIGHTS OVER THE MEASURES FOR IMPROVING ENERGY EFFICIENCY AND ADDITIONAL NON-ENERGY SERVICES

Final audit of the Public Lighting System and additional non-energy services;

Along with regular monitoring, measuring and verification of energy savings, and supervision and inspections of the Public Lighting System and additional non-energy services defined in the Monitoring, Measurement and Verification Plan (Annex 4 to the Contract), 12 (twelve) months before the expiry of this Contract, an independent expert selected by the Contracting Entity shall inspect in detail and test the overall Public Lighting System and additional non-energy services in order to determine its condition and technical functionality, especially the parts, elements and equipment installed within the scope of implementation of the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services. The costs of engaging an independent expert shall be borne by the Contracting Entity.

The independent expert referred to in Art. 13.1.1. shall be a legal entity and/or natural person technically and technologically apt to execute all foreseen inspection activities in line with the independent control requirements referred to in Annex 3 (Technical Requirements).

Along with the independent expert, the Provider's and Contracting Entity's Authorised Representatives shall also have the right to be present at the detailed inspection referred to in Art.13.1.1. During the inspection, the Provider's and Contracting Entity's Authorised Representatives shall have the right to present their remarks, comments or objections in relation to the manner of execution of the inspection and/or the conclusions of the independent expert. The independent expert shall indicate all comments and/or objections in the Record on the performed final audit.

Within 30 (thirty) days of the day of performed inspection of the Public Lighting System, the independent expert shall draft a proposal of the Record on the performed final audit and deliver it to the Contracting Entity and to the Provider in a written and electronic form within the deadline.

The proposal of the Record on the performed final audit shall, if necessary, along with other technical parameters and elements, contain the estimated cost of rectification of all identified deficiencies in relation to the parts, elements and equipment installed within the scope of implementation of the Measures for improving energy efficiency of the Public Lighting System and additional non-energy service, i.e. cost necessary for them to be rectified or replaced by properly functioning ones.

Should they not agree with the content and conclusions of the proposed Record on the performed final audit, the Contracting Entity and the Provider have 15 (fifteen) days of the day of its receipt to give a statement thereon in writing to the other contracting party and the independent expert. The independent expert shall have 15 (fifteen) days of the day of receipt of the Provider's and/or Contracting Entity's to accept or reject the objections of the dissatisfied contracting party.

Should the independent expert accept the contracting parties' objections, he/she shall draft the final Record on the performed final audit within 15 (fifteen) days of the day of expiry of the term for submission of feedback to the Provider's and/or Contracting Entity's observations and deliver it to the contracting parties. Should the independent expert not accept the

contracting parties' objections or there are no objections presented within the deadline defined by this Article, the submitted proposed Record on the performed final audit shall be the final Record on the performed final audit. If any contracting party is dissatisfied with the final Record on the performed final audit, the dispute shall be resolved in line with Chapter 26 of this Contract (Dispute Resolution).

If by the inspection of the Public Lighting System by the independent expert, the Provider and the Contracting Entity has shown deficiencies and irregularities in relation to parts, elements and equipment installed within the scope of the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services and they have been indicated in the final Record on the performed final audit, the Provider shall immediately proceed to their rectification and execute all works and activities within the deadlines prescribed by Art. 13.1.8 or 13.1.9 in order for all elements, parts and equipment installed within the scope of the Measures for improving energy efficiency and additional non-energy services be technically sound and fully functional, as well as satisfy all standards and requirements in relation to functionality, lighting quality parameters and energy efficiency defined by this Contract.

After the Provider rectifies all deficiencies indicated in the final Record on the performed final audit and ensures compliance with all requirements (especially the requirements related to lighting quality parameters and energy efficiency), it shall inform the Contracting Entity and the independent expert thereon in writing.

The Contracting Entity, the Provider and the independent expert shall perform a second inspection of the Public Lighting System in order to determine whether the Provider has rectified all deficiencies. If the second inspection of the Public Lighting System shows that the Provider has performed all necessary activities and repairs, the independent expert shall issue a written statement on the full functionality of the Public Lighting System and deliver it to the Contracting Entity and the Provider.

The Provider shall perform all activities and repairs as soon as possible, and no later than 4 (four) months before the expiry of this Contract.

Should the second inspection show that the Provider has not performed all activities and repairs, i.e. that the Provider has not obtained a Written statement on full functionality of the Public Lighting System no later than 2 (two) months before the expiry of this Contract, the Contracting Entity shall be able to activate the bank guarantee referred to in Art. 19.2.1 of this Contract.

Should the bank guarantee which warrants the fulfilment of contractual obligations within the Use Phase referred to in Art. 19.2.1 be insufficient to cover all costs of deficiency rectification, the Provider shall have the right to deny the payment of Fee up to the amount necessary to settle all costs of the Contracting Entity necessary to rectify all deficiencies which have not been rectified. Should the amount of the Bank Guarantee and Fee not be enough for the Contracting Entity to settle the costs of deficiency rectification and the Provider denies to settle them within 30 (thirty) days of receipt of a written request by the Contracting Entity, the Contracting Entity shall sue the Provider for the remaining amount.

Contract expiry and transfer of property rights

The Date of transfer of the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services shall be the day of expiry or termination of this Contract for any reason whatsoever.

The contracting parties agree that by the expiry or termination of this Contract for any reason whatsoever, all equipment, materials, elements, software (MCC excluded), documents, design documentation and other parts or components of the Public Lighting System which have been installed, reconstructed and/or modernised within the scope of the Measures for improving energy efficiency and additional non-energy services shall become property of the Contracting Entity (in case of software, the right to its use) without any obligation to pay any fee related thereto except in cases of early termination of this Contract, which gives the Provider the right to receive an early termination fee, in accordance with Chapter 25 of this Contract. The Provider and the Contracting Entity shall perform all necessary legal actions in order for formal and legal confirmation of property transfer according to the provisions of this Contract.

The Provider shall take over the risk and obligation, as well as all possible costs related to the amortisation of equipment and elements of the Public Lighting System installed within the scope of the Measures for improving energy efficiency and additional non-energy services and it shall be considered that they will be fully amortised during the term of this Contract.

By the transfer of property rights on the day of expiry or by the termination of this Contract for any reason whatsoever, the Provider shall also transfer intellectual property rights over all measures, documents and all other elements of the Public Lighting System or any other parts of computer programmes (excluding software which is subject to the provisions of Art. 13.2.4), documents etc. used in order to provide services during the term of this Contract without the obligation to pay any fees.

In accordance with the special provisions of licenses for software which represents an integral part of the Measures for improving energy efficiency and additional non-energy services, the Provider shall ensure that the Contracting Entity has the right to use (including the right to giving it for use to third legal entities and/or natural persons) all software (and all improved versions and updates of all software) which represents an integral part of the Measures for improving energy efficiency and additional non-energy services aimed at the further management of the Public Lighting System, i.e. the purpose for which it has been purchased and used.

The Provider shall also ensure that there are no hidden and/or abnormally high costs of maintenance and use of the aforementioned software or other computer programmes.

The Provider shall give the Contracting Entity a non-exclusive right to software use, unlimited in terms of content, time and space, without the right to its suspension and without the obligation to return it.

All software within the scope of the Measures for improving energy efficiency shall be open-source software, i.e. the Contracting Entity shall have access to its original code and have the possibility of its free use, study, modification and improvement.

During the term of the Contract, the Provider shall procure user manuals, technical information in at least 3 (three) copies and all improvements and updates of all used software (if it has been used) for the Contracting Entity.

The Provider undertakes to compensate the Contracting Entity for any real damage for the Contracting Entity arising from the violation of third legal entities' and/or natural persons' intellectual property rights in relation to any part of the design documentation, documents, software etc., used and assigned to the Contracting Entity by the Provider or its subcontractors ("Subject of Violation"). The Provider shall compensate the Contracting Entity if the Contracting Entity:

a) issues written notification within 30 (thirty) days of the day of coming into knowledge of third legal entity and/or natural person claims in relation to the violation of intellectual property or any other material or immaterial property right to the Provider;
b) does not acknowledge or prejudge the Provider's defence against the claim or the possibility of the Provider to negotiate with the aim of possible conclusion of settlement;
c) enables the Provider to control the defence procedure and all negotiations in relation to possible conclusion of settlement at its own cost; and
d) gives the Provider the support and information in the scope in which they might be necessary for the Provider to help in defence and all negotiations in relation to possible conclusion of settlement.

The Provider shall, if possible, replace or change the Subject of Violation by a part which is not subject of violation, or shall ask that the Contracting Entity has a right to use such a violated part (appeal stated in this provision shall represent the only appeal in relation to intellectual property rights violation)

RIGHT TO SUPERVISION (CONTROL) BY THE CONTRACTING ENTITY

Supervision (control) over the Contract execution shall take place in all phases of this Contract. The Contracting Entity shall have the right to inspect the process of drafting of the Design documentation, construction, i.e. reconstruction and/or modernisation, use and Project management, and the Provider shall, at its own expense (and as reasonable), make available all information, documents and proofs to the Contracting Entity.

Within Chapter 8 Control of Technical Requirements (Annex 3 to the Contract) Minimum requirements regarding control and verifying compliance with Contracting Entity's requests during the MCC Implementation Phase and the Designing Phase are prescribed. In the case that it is determined by control that the object of control does not satisfy the Contracting Entity's requests, the Contracting Entity will not grant the appropriate approval making the Provider unable to continue with the next phase (Reconstruction and/or Modernisation Phase).

The Provider shall not order luminaires and other parts, elements and equipment before obtaining the Contracting Entity's approval of the design documentation, i.e. the Contracting Entity shall not recognise any parts, elements or equipment costs that occurred before the Contracting Entity's approval of the design documentation.

If the Provider does not meet the requirements stated in Chapter 8 Control of Technical Requirements (Annex 3 to the Contract), it shall be considered that the Provider did not execute the provisions, i.e. fulfilled its obligations stated in this Contract and the Contracting Entity shall terminate the Contract due to the Provider's fault and collect the performance guarantee.

The Contracting Entity can perform the supervision (control) over the Contract execution independently or engage external experts or consultants at its own expense. All persons engaged by the Contracting Entity in order to perform the supervision (control) over the Contract execution in any phase shall have the right to perform the supervision (control) over the Contract in accordance with the written authorisation issued by the Contracting Entity. Such persons shall be called Authorised Representatives of the Contracting Entity and shall submit reports to the Contracting Entity and advise it on further steps aimed at the protection of its interests.

Contracting Entity supervision over the execution of this Contract does not mean supervision of execution of works (reconstruction and/or modernisation or any other works) which have to be performed in line with the applicable regulations. When executing the works and services which form an integral part of the energy service that the Provider provides in line with the obligations referred to in this Contract, the Provider shall act in the capacity of investor and ensure supervision over the execution of works, as well as any other supervision prescribed by applicable legal and technical regulations.

EQUIPMENT AND INSTALLATIONS GUARANTEES

The Provider shall ensure that all installed equipment, installations and all parts and elements within the scope of the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services is new (unused), suitable for its regular use in line with manufacturer's regulations, technical specifications referred to in the Tender for this Project, Technical Requirements, technical and other applicable regulations, i.e. that it does not contain any material and/or legal deficiencies.

The Provider shall ensure that all equipment and installations have valid manufacturer's guarantees and/or warranties in accordance with the best practice.

Minimum manufacturer's guarantees and/or warranties referred to in the previous paragraph of this Article are guarantees and/or warranties which are valid for at least 10 (ten) years since the moment of installation and launch into operation of materials, equipment and elements within the scope of the Measures for improving energy efficiency of the public lighting system and additional non-energy services.

In case of termination of this Contract for any reason whatsoever, the Provider shall, by cession (transfer) or other legal manner, transfer to the Contracting Entity rights and benefits arising from manufacturer's guarantees and/or warranties defined in this chapter of the Contract no later than on the day of expiry this Contract for any reason whatsoever.

The Provider shall comply with all manufacturer's directions, recommendations, guidelines and conditions and perform all other activities in order to secure compliance with all conditions of guarantees and/or warranties by the manufacturer of equipment and parts of the Public Lighting System in relation to the equipment, installations, parts and elements installed within the scope of the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services.

STANDARDS OF SERVICES

The standards and quality of the service that the Provider has to provide in accordance with this Contract are defined by this Contract, especially by the Technical Requirements (Annex 3 to the Contract) and the Tender (Annex 6 to the Contract).

The Provider undertakes to provide the service in line with the standards and quality defined by this Contract and its Annexes, and by signing this Contract, it expressly states that it is aware of all requirements of the Contracting Entity in relation to the services indicated in this Contract, Technical Requirements, Tender and other Annexes and appendices to the Contract, and that it is able to fulfil all the aforementioned requirements and provide service in line with the requested quality and the requested standards.

Should the services not be provided in line with the standards and quality specified by this Contract, Technical Requirements (Annex 3 to the Contract) and the Provider's Tender (Annex 6 to the Contract), the Fee referred to in Art. 17.1.2 (Offered Fee) of this Contract shall be calculated according to the provisions of Chapter 18 of this Contract.

Should the Provider continually provides a service which does not correspond to the specified standard (12 (twelve) or more months in a row or if 24 (twenty-four) or more months during the term of this Contract luminaries do not satisfy the specified standards at the monthly basis), it shall be considered that circumstances due to which the Contracting Entity has the right to terminate this Contract due to the Provider's fault have arisen. This shall especially be applicable in cases of failure to meet standards and requirements related to the guaranteed installed active power of the luminaires and the light quality requirements of the luminaires as defined by the Technical Requirements (Annex 3 to the Contract) and the Tender (Annex 6 to the Contract).

OFFERED FEE, REFERENCE CONSUMPTION, GUARANTEED SAVINGS AND SAVINGS

Offered Fee

The Offered Fee means the monthly fee indicated in the Tender (Annex 6 to the Contract) by the selected tenderer, i.e. Provider and it shall represent the fee for the service provided in the full scope and in line with all requirements, standards and quality prescribed by this Contract and annexes thereto. Offered Fee consists of sum of Offered Fee for Energy Efficiency Service (OFEES) and offered Additional non-energy Services Fee (ASF) which is deducted for amount of offered fee for commercial non-energy services (CSF).

The Fee represents the amount payable to the Provider for the provided service in the respective calendar month. The Fee is expressed as the monthly Offered Fee (regardless of the number of days in the month or the operating regime of the Public Lighting System) aligned in accordance with Chapter 18. The Provider shall issue an invoice for every calendar month, which represents the only fee payable to the Provider for all services and obligations related to the execution of this Contract and Project, and it is in the correlation with the quality and standard of the provided service. If the service is not fully provided in accordance with the Technical Requirements (Annex 3 to the Contract) and the Tender (Annex 6 to the Contract) and the Provider's performances are not in line with the requirements arising from the provisions of this Contract and Annexes thereto, the Offered Fee shall be aligned in accordance with Chapter 18 of this Contract.

The Offered Fee indicated in the Tender amounts to _____ EUR (Euro) (in words: _____), VAT excluded.

The 25% VAT (value added tax) on the Offered Fee indicated in the Tender amounts to _____ EUR (Euro).

The Offered Fee indicated in the Tender including VAT amounts to _____ EUR (Euro)

(in words: _____).

The sum of all Offered Fees indicated in the Tender represents the Tender Price without VAT and amounts to _____ EUR(Euro).

The sum of all Offered Fees indicated in the Tender including VAT represents the Total Tender Price and amounts to _____ EUR (Euro).

Reference consumption

Reference values for the calculation of the reference annual and monthly cost are defined by the annex Public Lighting System Reference Condition (Annex 2 to the Contract).

Reference annual and monthly consumption represents the Energy consumption of the Public Lighting System before signing this Contract and implementing the Measures for improving energy efficiency according to the reference operating regime.

The reference annual and monthly cost represents the cost of Energy consumption of the Public Lighting System before signing this Contract and implementing the Measures for improving

energy efficiency and additional non-energy services according to the reference operating regime (on the monthly basis and on the annual cumulative basis) and according to the reference price of Energy (Annex 8, Payment Plan and Savings Plan).

Guaranteed savings

By its Tender (Annex 6 to the Contract) and by signing this Contract, the Provider has undertaken the obligation and guarantees that it shall realise the Guaranteed savings and that the Offered Fee for Energy Efficiency Service (OFEES) for the provided energy efiiciency services shall be lower than the value of Guaranteed savings in accordance with the Payment Plan and Savings Plan (Annex 8 to the Contract).

The guaranteed savings are mirrored in the reduced energy consumption costs of the Public Lighting System, which are the result of the reduced active power of the luminaires and the dimming regime of the Public Lighting System by keeping or improving the lighting quality parameters of public areas and by maintaining the Reference Conditions defined in Chapter 17.2 such as Reference operating regime and Reference Energy Price.

The amount of the guaranteed savings has been defined in the Annex Payment Plan and Savings Plan (Annex 8 to the Contract).

The value of the guaranteed savings represents the difference between the Reference cost of the Public Lighting System before the implementation of the Measures for improving energy efficiency and the Cost of the Public Lighting System after the implementation of the Measures for improving energy efficiency in accordance with the Payment Plan and Savings Plan (Annex 8 to the Contract) without including energy consumption of additional non-energy services.

FEE FOR THE PROVIDED SERVICE

Fee payment

The period of provision of services by the Provider, i.e. period of MCC implementation, designing and execution of works of reconstruction and/or modernisation of the Public Lighting System, i.e. Measures for improving energy efficiency of the Public Lighting System and additional non-energy services shall begin to run on the Day of signing of this Contract. The first calendar day of the calendar month that follows the issue of the written notification on the Adoption of Measures for improving energy efficiency and additional non-energy services by the Contracting Entity shall be considered as the Day of the Adoption of Measures for improving energy efficiency and additional non-energy services and on that day, the Use Phase begins to run and the Contracting Entity undertakes to pay the Provider the Fee for the services provided in accordance with the provisions of this Contract.

The Provider acquires the right to be paid the Fee for the provided services only following the Adoption of the Measures for improving energy efficiency and additional non-energy services, i.e. the beginning of the Use Phase marks the beginning of provision of the energy and non-energy services. By the expiry of the first month of energy service provision, the Provider acquires the right to collect the fee for the provided services from the Contracting Entity.

The Fee shall be paid on a monthly basis during the term of the Contract. Every month, the Contracting Entity shall pay the Fee (N) calculated according to Article 18.2.1.to the Provider.

In order to pay the Fee, the Provider shall deliver the invoice to the Contracting Entity by the 10th (tenth) day of each month for the previous month, which the Contracting Entity shall pay within 60 (sixty) days of the day of invoice receipt.

The applicable legal overdue interest shall be paid on any unpaid due undisputed invoice.

The fee for the provided services shall be paid in EURO (EUR).

Should the Lenders ask for a cession, i.e. transfer of the Provider’s claim, i.e. should the Provider and Lenders close such legal arrangements on transfer of claims arising from this Contract, the Contracting Entity shall not have any objections thereon and shall act in accordance with the validly stipulated agreements. However, by this the Contracting Entity does not assume any obligation to pay any fees to which the Provider does not have right in accordance with the provisions of this Contract (especially in cases in which the Fees are reduced for the services provided under the contracted standards in accordance with Chapter 18 of this Contract).

Fee Calculation

The Provider shall deliver the invoice in relation to the Fee for the provided services to the Contracting Entity after the expiry of the calendar month in which it provided energy and non-energy service, in accordance with Article 18.1.1 and provisions of Article 2.2.3 and Chapter 10 of this Contract. The Provider shall calculate the Fee and issue an invoice to the Contracting Entity according to the following formula:

F = OFEES – AE – DF - DMCC + ASF – DASF - CSF

Whereas:

F = Fee payable to the Provider, VAT included;
OFEES = Offered Fee for Energy Efficiency Service indicated in the Tender (Annex 6 to the Contract) and the Payment Plan and Savings Plan (Annex 8 to the Contract), VAT included (VAT valid in the period for which the invoice is issued);
AE = adjustment in line with the measurement of energy efficiency standards;
DF = decrease due to deficiencies;
DMCC = decrease due to MCC malfunction or unavailability;
ASF = offered additional non-energy services fee, VAT included (VAT valid in the period for which the invoice is issued);;
DASF= decrease due to additional services malfunction or unavailability;
CSF = fee offered by Provider for right to provide commercial non-energy services using public lighting system, VAT included (VAT valid in the period for which the invoice is issued).

Fee calculated according to the formula referred to in this Article represents the fee including VAT as valid in the moment of invoice issue. PN, i.e. offered fee from the formula represents the fee indicated in the Tender (Annex 6 to the Contract) increased by VAT valid in the moment of invoice issue. Fee calculated in accordance with this Article represents the only fee payable to the Provider for all services provided according to this Contract.
Fee payable to the Provider cannot have a negative value.

Adjustment due to measurement of energy efficiency standards (AE) means the amount of adjustment of the Offered Fee in relation to the Provider's delivery of services below or above the requested energy efficiency standards, i.e. means the adjustment amounting to the product of the electricity price and sum of all differences of the measured active power of luminaires and Guaranteed installed active power of luminaires referred to in the Provider's Tender (Annex 6 to the Contract). The difference is calculated in accordance with the Monitoring, Measurement and Verification Plan (Annex 4 to the Contract), according to the following formula:

$$AE = \sum_{i=1}^{n} \left(\sum_{d=1}^{m} (MP_{i-d} - GIP_{i-d}) * h_d \right) * EP$$

Whereas:

n – overall number of functional luminaries within the Measure implementation framework;
m = number of measurements within calculation period for luminaire;
MP = measured active power of the luminaire (kW);
GIP = Guaranteed installed active power of the luminaire in accordance with the Technical Requirements (Annex 3 to the Contract), Tender (Annex 6 to the Contract) and with the Payment Plan and Savings Plan (Annex 8 to the Contract) (kW);
h_d = time interval of measurement expressed in hours;

EP = Electricity price, VAT included (total price per kWh[1]) to be paid by the Contracting Entity in the month for which the invoice is issued;

Note: AE can also be negative (if AE<0) if the Provider has realised higher savings, i.e. if the measured active power of the Public Lighting System is smaller than the Guaranteed installed active power of the Public Lighting System.

Reduction due to deficiencies (DF) is the amount of reduction of the Offered Fee due to Provider's delivery being under the required luminaire standards. Reduction due to deficiencies is calculated in the manner that, for every day of Provider's delay in the rectification of the reported deficiency (e.g. faulty or malfunctioning luminary, or luminary of unsatisfying lighting quality parameters), reduction of fee is calculated for every single deficiency, according to the following formula:

$$\boldsymbol{DF = \sum_{i=1}^{z} (D_i * KZ_i)}$$

Whereas:
DF = fee reduction due to luminary malfunction;
z – number of non-functioning luminaries;
D_i = days of delay of replacement/rectification of the reported deficiency;
KZ_i = penalty per day of delay amounting to 70 EUR for luminaries which light areas classified as M1, M2, M3, C1, C2, C3, C4, P1, P2 and 30 EUR for luminaries which light other areas.

Reduction to MCC malfunction is the amount of reduction of the Offered Fee due to Provider's delivery being under the required Management & Control Centre standards. Reduction due to deficiencies is calculated in the manner that, for every day of MCC malfunction, the fee is reduced, according to the following formula:

$$\boldsymbol{DMCC = (KZ_D * j)}$$

Whereas:
DMCC = reduction of fee due to MCC malfunction;
j = days of delay of rectification of MCC malfunction;
KZ_D = penalty per day of delay of rectification of MCC malfunction amounting to 3% of the Offered Fee, VAT included (applicable in the period for which the invoice is issued) for every day of delay;

MCC malfunction is defined in Technical Requirements (Annex 3 to the Contract) and in Monitoring, Measurement and Verification Plan (Annex 4 to the Contract).

Fee offered by Provider for right to provide commercial non-energy services using public lighting system (CSF) is the amount payable from Provider to Contracting Entity for right to provide commercial non-energy services using public lighting infrastructure according to provisions of this Contract.

[1] The total price per kWh does not include items whose price is calculated in the lump sum, i.e. that are not related to energy consumption (e.g. measurement service fee, overdue interest)

Additional non-energy service fee is the amount payable to Provider for delivery of non-energy services to Contracting Entity fully compliant to all technical requirements of this Contract (Annex 3 Technical requirements).

The fee to be paid to the Provider for the provision of services includes all costs and risks that the Provider has and has had in the execution of this Contract and provision of services, as well as the Provider's reasonable profit, and shall represent the only fee and payment which the Provider shall accept for the fulfilment of all obligations arising from this Contract from the Contracting Entity.

Should there arise a dispute in relation to monitoring, measuring and verification of performances of the Public Lighting System and amounts of **AE**, **DF, DMCC, or DASF**, i.e. in relation to the calculation of the Fee, the contracting parties shall try to resolve it amicably. If this is not possible, they shall resolve the dispute in accordance with the provisions of Chapter 26 of this Contract (Dispute resolution).

GUARANTEES

Guarantee in the phase of MCC implementation, designing and reconstruction and/or modernisation

The Provider shall provide the Contracting Entity with a performance guarantee in the case of breach of contractual obligations in the **MCC Implementation Phase**, **Designing Phase and Reconstruction and/or Modernisation Phase**.

The guarantee shall be delivered in EURO. The amount of the guarantee is calculated in accordance with the Annex Investment Value (Annex 7 to the Contract) as 10% of the total value including the costs of reconstruction and/or modernisation of the Public Lighting System (Part A): paragraphs 1 (Designing, Approvals and Permits) and 2 (Reconstruction and/or Modernisation) and costs of Capital expenses of installation of non-commercial additional non-energy services (Part C) paragraphs 1(Designing, Approvals and Permits) and 2 (Installation of equipment for provision of services) without VAT.

The guarantee shall be delivered within 15 (fifteen) days of the Day of signing of this Contract, under the threat of Contract termination and collection of the tender guarantee.

The performance guarantee shall be in the form of an irrevocable, unconditional bank guarantee, payable on first demand, without any right to protest, valid for 36 (thirty-six) months since the day of issue. The bank guarantee shall be delivered to the address: ……..

The bank guarantee shall be delivered in the ……. language, which shall also be the language of its interpretation. In case of stipulation of contract with a group of economic operators (tenderers), the guarantee shall be submitted by the group leader (tender holder) or by all members of the group jointly, or by one member of the group of economic operators, in the whole amount.

The Provider can submit a cash deposit in the requested amount. The cash deposit is paid into the guarantee beneficiary's account, whose data is indicated in Chapter 27. The deposit shall be registered in the Contracting Entity's account in line with the terms prescribed by this Contract.

Guarantee in the Use Phase

The Provider shall provide the Contracting Entity with a performance guarantee in the case of breach of contractual obligations in the **Use Phase**.

The guarantee shall be delivered in EURO, in the amount of the sum of 12 (twelve) Offered Fees excluding VAT:

The guarantee shall be delivered no later than 15 (fifteen) days before the expiry of the performance guarantee in the MCC Implementation Phase, Designing Phase and Reconstruction and/or Modernisation Phase, under the threat of contract termination and collection of performance guarantee in the design phase and in the reconstruction and/or modernisation phase.

The performance guarantee shall be in the form of an irrevocable, unconditional bank guarantee, payable on first demand, without any right to protest, valid for a minimum of one year since the date of issue. The bank guarantee shall be delivered to the address: ……..

The bank guarantee shall be updated during the term of the Contract (up to its expiry) by replacing it with a new identical valid bank guarantee 15 (fifteen) days before its expiry. The bank guarantee shall be delivered in the …… language, which shall also be the language of its interpretation. Should the Provider fail to deliver a new bank guarantee. the Contracting Entity shall, before the expiry of the currently valid bank guarantee, collect the guarantee in the full amount. Should the Provider subsequently deliver a new valid bank guarantee, the Contracting Entity shall return it 90% (ninety per cent) of the collected amount of the previous guarantee if that guarantee has not been used to remedy malfunctions and deficiencies due to the Provider's failure to fulfil obligations arising from the Contract. In case of stipulation of contract with a group of economic operators (tenderers), the guarantee shall be submitted by the group leader (tender holder) or by all members of the group jointly, or by one member of the group of economic operators, in the whole amount.

The Provider can submit a cash deposit in the requested amount. The cash deposit is paid into the guarantee beneficiary's account, whose data is indicated in Chapter 27. The deposit shall be registered in the Contracting Entity's account in line with the terms prescribed by this Contract.

Guarantee activation and collection

Should the Provider not deliver guarantees referred to in this chapter of the Contract, according to the provisions and within the deadlines prescribed by this chapter of the Contract, the Contracting Entity shall have the right to terminate the Contract due to the Provider's fault and exercise the right to collect all guarantees.

In case that the Contracting Entity activates the guarantee referred to in Article 19.2.1 of this Contract (performance guarantee for the case of breach of contractual obligations during the Use Phase), and the Provider does not deliver a new guarantee within 6 (six) months since guarantee activation, the Contracting Entity shall have the right to terminate the Contract due to Provider's fault and keep the collected amount.

INSURANCE

The Provider shall, at the latest one day before the beginning of the reconstruction and/or modernisation phase, conclude an insurance policy in relation to all risks inherent to the Measures for improving energy efficiency and additional non-energy services during the reconstruction and/or modernisation phase:

a) in the amount of capital value of the Measures for improving energy efficiency and additional non-energy services[2] for all materials and works included within the scope of implementation of the Measures for improving energy efficiency and additional non-energy services, VAT excluded, which needs to cover, in the full amount, all damage arising from all risks, e.g. shall include damage caused by: fire, lightning strikes (direct and indirect), explosions, short circuit, earthquake, flood, torrent, high water, underground water, storms, hail, events and demonstrations, water overflow, crash of own motor vehicle and own movable working machine and unknown motor machine into insured objects, aircraft fall and crash, frost, snow, ice, avalanche, rain, freezing rain, landslides, soil erosion, land subsidence, construction accidents, burglaries, ineptitude, negligence or malevolence of workers and other persons;
b) existing and surrounding property (or owned property or has been given for care, storage or supervision) of the Contracting Entity, distributor of electricity and executor of works such as poles, luminaries, supply cables, bumpers and roads for damages arising from installation works in the insurance amount of ……...EUR per adverse event and ……EUR per policy in total;
c) Additional expenses of cleaning up rubble, replacement and additional expenses of overtime work, night work, work on public holidays, emergency transport in the insurance amount of ……EUR per adverse event and per policy in total.

The insurance shall be valid for the whole duration of the reconstruction and/or modernisation phase.

The maximum deduction of a franchise (retention) per adverse event shall not exceed ……..EUR and if it is indicated in the policy, it shall be in the absolute amount (without the percentage as to the damage). The insured by every insurance policy shall include the Provider, Contracting Entity, as well as all subcontractors whose value of works is included in the total value of works.

The Provider shall, at the latest one day before the beginning of the reconstruction and/or modernisation phase, conclude an insurance policy in relation to all liabilities inherent to the Measures for improving energy efficiency and additional non-energy services during the reconstruction and/or modernisation phase:

a) liability insurance against third parties up to …….EUR per adverse event and ……EUR per policy in total;
b) within the limits of liability against third parties, it implies the mutual liability of the Provider and all executors of works and/or subcontractors;

The insurance shall be valid for the whole duration of the reconstruction and/or modernisation phase.

[2] value of the Measures for improving energy efficiency and additional non-energy services is the value of reconstruction and/or modernisation and value of Capital expenses of installation of non-commercial additional non-energy services indicated in the Annex Investment Value (Point 2 in the Annex 7 to the Energy Performance Contract).

Coverage shall be contracted without the deduction of a franchise (retention). The insured by every insurance policy shall include the Provider, Contracting Entity, as well as all subcontractors whose value of works is included in the total value of works.

Following the end of the reconstruction and/or modernisation phase, the Provider shall contract a property insurance policy in relation to all risks:

a) in the amount of value of the Measures for improving energy efficiency and additional non-energy services[2] for all materials and works included within the scope of implementation of the Measures for improving energy efficiency and additional non-energy services, VAT excluded, which needs to cover, in the full amount, all damage arising from all risks, e.g. shall include damage caused by: fire, lightning strikes (direct and indirect), explosions, earthquake, flood, torrent, high water, underground water, storms, hail, events and demonstrations, water overflow, crash of own motor vehicle and own movable working machine and unknown motor machine into insured objects, smoke, supersonic shock wave, aircraft fall and crash, frost, snow, ice, avalanche, rain, freezing rain, landslides, soil erosion, land subsidence, burglaries, breaking glass (bulbs/lamps) and violence by third parties or vandalism;

b) expenses related to cleaning up, demolition, fire extinction, removal, dismantling, second installation, protection, isolation and cleaning, as well as expenses of transport to the nearest allowed landfill in the insurance amount of HRK 1,000,000.00 per adverse event and yearly per policy.

The Provider shall ensure that, during the whole term of this Contract, since the moment of Adoption of the Measures for improving energy efficiency and additional non-energy services until the moment of expiry of this Contract, it has valid insurance policies in accordance with this Article. The Provider shall have the possibility to contract the aforementioned insurance policies in annual periods. The insurance policy for the subsequent year shall be delivered at least 15 days before expiry of the old insurance policy. If the Provider does not obtain new insurance policies in accordance with the provisions of this Article, the Contracting Entity shall be entitled to collect the performance guarantee referred to in Article 19.2.1 and to terminate this Contract due to Provider's fault.

The maximum deduction of a franchise (retention) per adverse event shall not exceed …….EUR and if it is indicated in the policy, it shall be in the absolute amount (without the percentage as to the damage).

Following the end of the reconstruction and/or modernisation phase, the Provider shall contract a property insurance policy in relation to liabilities inherent to the Measures for improving energy efficiency and additional non-energy services:

a) liability insurance against third parties up to …….EUR per adverse event and ……EUR annually per policy in total;
b) property damage insurance up to the insurance amount and in ……EUR annually per policy in total.

The Provider shall ensure that, during the whole term of this Contract, since the moment of Adoption of the Measures for improving energy efficiency and additional non-energy services until the moment of expiry of this Contract, it has valid insurance policies in accordance with this Article. The Provider shall have the possibility to contract the aforementioned insurance policies in annual periods. The insurance policy for the subsequent year shall be delivered at least 15 days before expiry of the old insurance policy. If the Provider does not obtain new insurance policies in accordance with the provisions of this Article, the Contracting Entity

shall be entitled to collect the performance guarantee referred to in Article 19.2.1 and to terminate this Contract due to Provider's fault.

The maximum deduction of a franchise (retention) per adverse event shall not exceed ……..EUR and if it is indicated in the policy, it shall be in the absolute amount (without the percentage as to the damage).

The insurance policy fees shall be used by the Provider only for the purpose of damage remediation and damages towards third parties. The policies shall be to the benefit of the Lender, and after the expiry of the loan agreement, the Provider shall provide the policies to the benefit of the Contracting Entity no later than 30 (thirty) days of the day of expiry of the loan agreement with the Lenders. After the Provider remedies all damage and following the payment of compensation for damage per the valid insurance policy, the Contracting Entity shall forward the amount received from the insurance company to the Provider.

INTELLECTUAL PROPERTY, TRADE SECRET AND DATA CONFIDENTIALITY

The contracting parties agree that the provisions of this Contract and all related documentation, unless the Provider has marked any parts of its Tender as a trade secret, shall not be considered confidential data and can be published without restrictions. When marking trade secrets in the tender, the Provider shall abide by the provisions of Article … of the Public Procurement Act and Point 7.17.1. of the Tender Documentation.

The contracting party which considers that any piece of information, document, methodology, software etc. represents its trade secret, confidential information, intellectual property or that its unprotected and unlimited publishing causes damage or might cause damage to that contracting party, the same party shall have the obligation and right to inform the other contracting party thereon in writing.

If the contracting party has not informed the other contracting party that a piece of information, design documentation, file, calculation, methodology etc. is considered its trade secret, intellectual property etc., the other contracting party shall not be held responsible for publishing it and for any damage arising therefrom.

The contracting parties shall keep trade secrets, confidential information and intellectual property of the other contracting party during the whole term of this Contract and after its expiry as well, if it is reasonable and justified, i.e. if there are still economic and business reasons for doing so.

If, by respecting the provisions referred to in this Chapter, a contracting party causes damage to third legal entities and/or natural persons, without having consciously violated any act or rights, the same contracting party shall not be held responsible to compensate the third legal entity and/or natural person in question, but the contracting party which has without any reason, without any legal basis or in opposition to the practice and regulations, has used third legal entity's and/or natural person's intellectual property or has in any other manner violated any right of the third legal entity and/or natural person, shall entirely be held responsible for the violation.

The contracting parties shall inform all employees, contractors and persons authorised for the execution of activities inherent to the Project on the rights and obligations arising from the provisions of this Chapter.

The provisions of this Chapter of the Contract shall in no way preclude the possibility of the contracting parties, their employees or authorised persons to supervise the execution of the Contract, i.e. to carry out activities and obligations defined by other provisions of this Contract.

The Contracting Entity shall have the full and unlimited right to deliver all information, data, projects, documents etc. to all state and public institutions to which it is obliged to deliver it according to applicable regulations. The Provider shall not have the right to compensation of any damage arisen due to actions that the Contracting Entity performed in order to satisfy its legal obligations. Regardless of the obligation to respect regulations, the Contracting Entity shall, according to the legal framework and in good faith, protect the Provider's trade secrets, intellectual property and confidential data by informing all involved parties to which it delivers the aforementioned data on the Provider's rights related to them.

No data and/or information necessary to manage, maintain, modernise or reconstruct the Public Lighting System can be considered a trade secret, confidential information or intellectual

property. After the expiry or termination of this Contract for any reason whatsoever, all rights to use intellectual property, trade secrets and information necessary for the management of the Public Lighting System, shall be automatically transferred to the Contracting Entity without the need to pay any fee. The Contracting Entity shall not have the right to reproduce, share and/or make available such business information, trade secrets or intellectual property to third legal entities and/or natural persons but its right to use such business secrets and intellectual property shall be limited to use related to the execution of this Project and management and maintenance of the Public Lighting System after the expiry or termination of this Contract for any reason whatsoever.

The provisions of this Chapter shall not regard the right to use software as described in Article 13.2.4 of this Contract.

FORCE MAJEURE

Force majeure in general

Force majeure implies any unforeseeable exceptional situations or events which are out of the contracting parties' control, which took place during the term of the Contract, which prevent the contracting parties to fulfil their contractual obligations and which cannot derive from their own errors or negligence (nor from the errors or negligence of their subcontractors providing services, goods or works, from their representatives or employees), and prove to be insurmountable despite the due care. Equipment or material defects or delays in making them available, work disputes, strikes of Providers or their subcontractors or associated persons' employees or financial difficulties cannot be considered as force majeure. A contracting party shall not be considered as being in breach of its contractual obligations if it is prevented in fulfilling them due to force majeure.

In terms of the provisions of this Contract, only the following events shall be considered as force majeure:

a) War, civil war, armed conflict, terrorism, public riots, general strikes (with the exception of those directly linked to the Provider or its subcontractors) or
b) Nuclear, chemical or biological pollution, except if it comes as a result or consequence of the Provider's or its associated persons' (subcontractors and sim.) failure to fulfil their contractual obligations or
c) Natural disaster such as devastating earthquakes, flooding, explosion or
d) Embargo having an impact on the Provider's capacity to deliver goods, parts or elements or
e) Unusual electromagnetic or other waves influencing the Provider's fulfilment of obligations or having an impact on the correct functioning of the equipment, without the possibility to protect the equipment.

Procedures to be applied in case of force majeure

The contracting party affected by force majeure shall notify the other contracting party in writing about the events and/or circumstances relating to force majeure or acts of god, as defined in this Article, as soon as possible after the occurrence of such events and/or circumstances, at the latest within 15 (fifteen) days of the date of occurrence of force majeure, or of the moment of becoming aware thereof. In such case the affected contracting party shall notify the other party in writing of the obligations it is unable to fulfil during the aforementioned events and/or circumstances.

Upon delivery of the written notice referred to in the above paragraph to the other contracting party, the affected contracting party shall continue informing the other contracting party in writing of any further developments and/or circumstances relating to force majeure or acts of god, as soon as possible, as well as of the period in which it can reasonably be expected to be able to continue performing the commitments assumed. The contracting party affected by force majeure shall notify the other contracting party in writing, as soon as possible, at the latest within 5 (five) days of the day of termination of the event or circumstance relating to force majeure, on the occurrence of such an event.

In order for a contracting party to invoke force majeure or acts of god and the provisions of the Contract relating thereto, it shall also submit evidence of their occurrence, as well as the evidence that

the occurrence of force majeure or acts of god prevents that contracting party to fulfil its contractual obligations.

During force majeure or acts of god, the contracting parties shall consult each other and cooperate in order to maximally mitigate the consequences of force majeure or acts of god on the performance of the Contract.

Effects of force majeure

None of the contracting parties shall be allowed to invoke the other contracting party's breach of contractual obligations during the events and/or circumstances of force majeure or acts of God coming as a result thereof. Also, none of the contracting parties can request the other contracting party to indemnify it for the damages due to the failure of the contracting party affected by force majeure to fulfil its contractual obligations or to the consequences thereof.

With the exception of cases foreseen by this chapter of the Contract, during force majeure or acts of God, the Contracting Entity shall not be entitled to terminate this Contract due to the Provider's failure to fulfil the obligations referred to in this Contract or due to the Provider's fault if it is a consequence of force.

In the case of an event or circumstance of force majeure or acts of God foreseen by this article, the term of this Contract shall be extended for the duration of force majeure or acts of God. Also, the obligations arising from this Contract shall be temporarily suspended until the cessation of the circumstances or events of force majeure or acts of God. The contracting parties undertake to invest their maximum common efforts in order to eliminate the effects of force majeure or acts of God. Both parties shall bare equal expenses of the occurrence of events of force majeure. Upon termination of force majeure or acts of God, the term of this Contract shall be extended for the duration of force majeure.

If the contracting parties do not agree on the modalities of elimination or mitigation of the consequences of force majeure or acts of God and if they do not provide for normal execution of this Contract, i.e. fulfilment of contractual obligations within 120 (one hundred and twenty) days of the day of the occurrence of force majeure, or if the consequences of force majeure or acts of God are such that the affected contracting party does not have the possibility of fulfilment of its contractual obligations for a period exceeding 180 (one hundred and eighty) days, any of the contracting parties shall be allowed to terminate this contract due to force majeure.

If, in accordance with the provisions of the previous paragraph of this article, any of the contracting parties decides to terminate the contract for reasons of force majeure or acts of God, that contracting party is obliged to notify the other contracting party in writing. After the contracting party to whom the notice on Contract termination due to force majeure has been sent receives the notice, a 20-day notice period shall start running, after which the Contract shall be considered terminated.

CONTRACTUAL PENALTY

In the event that the Provider does not realise the Adoption of the Measures for improving energy efficiency of the public lighting system and additional non-energy services within 24 (twenty-four) months of the Day of signature of this Contract, for reasons of failure to fulfill its obligations referred to in this Contract and Technical Requirements (Annex 3 to the Contract) and the Tender (Annex 6 to the Contract), the Contracting Entity shall be entitled to charge the Provider for contractual penalty due to delay, except in cases of force majeure and in cases where the Contracting Entity does not fulfil its obligations.

Contractual penalty for delay referred to in article 23.1.1 shall amount to 0.2% of the reconstruction and/or modernisation of the public lighting system value or the value of the Measures for improving energy efficiency and additional non-energy services defined as Provider's investments in the attachment titled Investment value (Annex 7 of the Contract) per day of delay. Reconstruction and/or modernisation value includes the costs of reconstruction and/or modernisation of the Public Lighting System and implementation of additional non-energy services (Part A): item 1 Design, consents and permits and item 2 Reconstruction and/or modernisation and (Part C) item 1 (Designing, Approvals and Permits) and item 2 (Installation of equipment for provision of services).

The Contracting Entity shall notify in writing the Provider of its request for payment of the Contractual penalty due to delay and shall indicate the amount of the Contractual penalty referred to in Article 23.1.2 that the Provider is obliged to pay.

The Provider is obliged to pay the amount of contractual penalty referred to in Article 23.1.2 within 30 (thirty) days of the receipt of the written notice referred to in Article 23.1.3.

The Contracting Entity is entitled to charge contractual penalty even in the event that the amount of Contractual penalty exceeds the amount of damage suffered by the Contracting Entity due do the Provider's delay, i.e. even when the Contracting Entity has not suffered any damage due to Provider's delay.

Apart from contractual penalty, the Contracting Entity is entitled to claim the payment of the difference to the full payment of damages.

In order to collect the contractual penalty referred to in this chapter, the Contracting Entity is entitled to activate the guarantees referred to in Article 19.1 of this Contract.

CONTRACT TERMINATION

Contract expiration or termination

This Contract shall cease to be valid on the date of the event which occurs the first:

a) Date of termination of this Contract due to the Provider's fault or
b) Date of termination of this Contract due to the Contracting Entity's fault or
c) Date of termination of this Contract based on the Contracting Entity's discretionary right to terminate the Contract or
d) Date of termination of the Contract due to force majeure or
e) Date of termination due to consensual termination by the contracting parties or
f) Date of regular expiration of the Contract.

Contract termination due to the Provider's fault

Upon termination of this Contract for any reason or upon its expiration, the provisions of this Contract referring to business secrecy, confidential information, intellectual property, right to damages compensation, Contract termination fees or obligations to submit documents, files, projects, transfer of property rights or rights to use taken over by the parties through this Contract shall not cease. Upon termination of this Contract for any reason or by its expiration, all parts, elements and equipment installed under the Measures for improving energy efficiency of the public lighting system and additional non-energy services shall become the Contracting Entity's property in accordance with Article 13.2 of this Contract.

The Contracting Entity is entitled to terminate this Contract due to the Provider's fault in the following cases:

a) The Provider has encumbered the property of the Project and/or parts, elements and equipment of the Measures for improving energy efficiency of the public lighting system and additional non-energy services without the Contracting Entity's knowledge and consent;
b) The Provider has transferred property rights and/or rights to use the Measures for improving energy efficiency of the public lighting system and additional non-energy services without the Contracting Entity's knowledge and consent;
c) The Provider has not allowed the Contracting Entity nor given it the possibility to inspect and supervise during the period of MMC Implementation Phase, Designing Phase or Reconstruction and/or modernisation Phase and Use Phase foreseen by this Contract;
d) Should the independent control during the period of MCC implementation Phase and the period of Designing Phase, in accordance with Annex 3 to this Contract, reveal that the designed solution of the luminaire or MCC repeatedly does not satisfy the specified requirements of the Contracting Entity in accordance with Annex 3 to the Contract (Technical Requirements, Part A of Technical Requirements – Minimum technical requirements and Part B of Technical Requirements – Designing Phase);
e) The Provider has not obtained the Contracting Entity's consent to the design documentation or the MCC in accordance with Article 7.2.2 or Article 8.2.1 of this Contract ___ (____) months after the Day of signature of the Contract, except in cases where it comes as a consequence of the Contracting Entity's failure to fulfil the obligations or force majeure;
f) The Provider has not obtained construction permit _____ months after the Day of signature of this Contract, in the event when the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services foresee the execution of works which require the issue of a construction permit;

g) The Provider has not gained the Adoption of the Measures for improving energy efficiency of the public lighting system and additional non-energy services ____ (_____) months of the Day of signature of the Contract, except in the case that the term is extended by the Contracting Entity or in case of force majeure;
h) The Provider has not complied with the provisions of Chapter 12 herein or has signed contracts with other legal entities and/or natural persons which are not compliant with the requirements foreseen by chapter 12 of this Contract.
i) The Provider has not duly stored and/or disposed the dismantled pieces, elements and equipment of the Public Lighting System;
j) The Provider is finally accused of corruption or economic crime in the context of its business operations or implementation of this Project;
k) The Provider has not submitted bank guarantees and securities foreseen by Chapter 19 hereof;
l) The Provider has repeatedly been breaching its obligations under this Contract without any correction, even after a written warning of the Contracting Entity;
m) By its actions or failure to act the Provider jeopardises health and safety of the users of public lighting;
n) During a contractual year there have been ___ (___) or more days with ___% or more non-functioning lamps in the overall number of lamps installed under Measures for improvement of energy efficiency of the Public Lighting System, this does not apply in case of force majeure or acts of god;
o) If the measurement of lighting quality parameters shows discrepancy from Contracting Entity's requirements, the Provider shall be given a three-month deadline to replace this type of luminaries. Should the Provider not replace them within the given deadline, and should the replaced lamps not correspond to the specifications, the Contracting Entity is entitled to terminate the Contract due to the Provider's fault;
p) Should the Provider not achieve the Guaranteed Savings of electricity during a period of ___(___) subsequent contractual months or should it not achieve the Guaranteed Savings of electricity during a total of _____(____) months during the term of the Contract;
q) The Provider has announced the opening of its insolvency proceedings or has started a pre-bankruptcy agreement proceedings;
r) The Provider has not obtained insurance policies in accordance with Chapter 20 of this Contract.

Before terminating the Contract, the Contracting Entity shall inform the Provider in writing about the occurrence of events which give it the right to terminate this Contract and about its intention to terminate the Contract due to the Provider's fault. In its written notice of intention to terminate the Contract the Contracting Entity shall give the Provider the right to correct the event or eliminate deficiencies within 30 (thirty) days of the day of receipt of the notice of the Contracting Entity.

Should the Provider not correct the event or eliminate the deficiencies within 30 (thirty) days of the day of receipt of the information referred to in paragraph 1 of this Article, the Contracting Entity shall refer to the Provider with a written notice of termination of the Contract due to the Provider's fault, defining that the termination of the Contract and the cessation of its validity shall occur after the expiration of the notice period of 20 (twenty) days of the receipt of Contracting Entity's termination notice.

Contract termination due to the Contracting Entity's fault

The Provider is entitled to terminate the Contract due to Contracting Entity's fault in the following cases:

a) The Contracting Entity has not paid the Fee charged within 60 (sixty) days of its payment due date;
b) The Contracting Entity has continuously not fulfilled its obligations foreseen by the provisions of this Contract despite the Provider's written warnings, by which it has prevented the Provider from the fulfilment of its obligations under this Contract.

In the events where the Provider is entitled and intends to terminate the Contract, it will give a written notice to the Contracting Entity. By its written notice to the Contracting Entity, the Provider shall request the Contracting Entity to correct the deficiencies, errors or events which led to the cases due to which the Provider is entitled to terminate the Contract due to the Contracting Entity's fault, and give it a 30 (thirty) day deadline, running from the day of receipt of that notice, to correct them.

Should the Contracting Entity not correct the errors, deficiencies, events which led to the situations in which the Provider is entitled to terminate this Contract due to the Contracting Entity's fault within 30 (thirty) days of the day of receipt of the notice referred to in Article 24.3.2, the Provider shall send a termination notice to the Contracting Entity by indicating the date of termination of the Contract, which will take effect at the expiration of a 20-day (twenty-day) notice period of the receipt of the Provider's termination notice.

Contract termination due to the Contracting Entity's Discretionary Right

In accordance with the provisions of this Article, the Contracting Entity's discretionary right is to terminate this Contract at any moment during the Contract term without indicating any reasons. Should the Contracting Entity decide to exercise this right and terminate the Contract accordingly, it shall send a written notice to the Provider.

In the written contract termination notice based on its discretionary right the Contracting Entity shall indicate the Provider's mandatory termination notice period which cannot exceed 90 (ninety) days of the day of receipt of the Contracting Entity's notice.

Upon receipt of termination notice based on the Contracting Entity's discretionary right, the Provider shall prepare the calculation of Contracting Entity's expenses of such termination, which means the calculation of the termination fee, in accordance with the rights of the Provider arising from the provisions of this Contract (chapter 25 of this Contract). In the event of termination based on the Contracting Entity's discretionary right, the Provider shall be entitled to charge the termination fee equal to the fee in the event of contract termination due to the Contracting Entity's fault.

The calculation of termination fee referred to in the previous paragraph of this Article, which the Provider shall claim against the Contracting Entity, shall be made by the Provider within 60 (sixty) days of the day of receipt of the notice of termination based on Contracting Entity's discretionary right and shall submit it to the Contracting Entity in writing as soon as possible, at the latest 20 (twenty) days before the date of termination of the Contract referred to in the Contracting Entity's written notice of termination based on discretionary right referred to in Articles 24.4.1 and 24.4.2.

Should the Contracting Entity agree with the calculation of the termination fee prepared and calculated by the Provider, and claimed by the Provider in the event of contract termination based on the Contracting Entity's discretionary right, the Contracting Entity shall notify that in

writing to the Provider at the latest 5 (five) days of the day of Contract termination referred to in the notice of termination based on discretionary right referred to in Articles 24.4.1 and 24.4.2.

If the Contracting Entity has agreed with the calculation of the termination fee which has been prepared by the Provider and will be claimed by the Provider, the Provider loses the right to calculate additional expenses, any other damages or any other increases of the calculated and accepted termination fee, apart from those linked to the penalties due to irregular payments of it.

If the Contracting Entity does not agree with the calculated termination fee, it will notify the Provider. In the event that the contracting parties do not agree on the termination fee due to the termination of contract based on the Contracting Entity's discretionary right, the dispute shall be solved in accordance with Chapter 26 of this Contract (Dispute Resolution and Governing Law).

The Contracting Entity shall be entitled to withdraw its decision on the termination of the Contract based on discretionary right at the latest 5 (five) days of the day of Contract termination contained in the termination notice referred to in Articles 24.4.1 and 24.4.2. Should the Contracting Entity decide to withdraw its decision on the termination of Contract based on the Contracting Entity's discretionary right in accordance with the provisions of the previous paragraph of this Article, the Provider shall be entitled to charge the expenses suffered due to the preparation of the for Contract termination and to the calculation of termination expenses i.e. termination fee.

For the whole duration of the procedure referred to in this Chapter, i.e. until the moment of receipt of the written notice of contract termination based on the Contracting Entity's discretionary right, the Provider shall be obliged to duly perform its contractual obligations and to provide services until the moment in which the Contract is effectively terminated, i.e. until the moment when it loses effect. During the aforementioned period, the other provisions of the Contract, particularly those referring to the Provider's obligations in providing the services and the Contracting Entity's obligations of payment of the calculated Fee shall remain valid without any limitation.

Early termination of Contract due to Force Majeure

Should the contracting parties fail to agree on the manner of establishing normal functioning of the Contract and fulfilment of contractual obligations and service provision within 120 (one hundred and twenty) days of the day on which Force Majeure takes place or consequences of Force Majeure are such that the affected contracting party cannot fulfil its contractual obligations for more than 180 (one hundred and eighty) days, then any contracting party has the right to terminate this Contract due to Force Majeure.

Should any contracting party, in accordance with the provisions of previous paragraph of this Article, decide to terminate the Contract due to Force Majeure, the same contracting party shall be obliged to inform the other contracting party thereon in writing. By the reception of the written notice on the termination of the Contract due to Force Majeure by the contracting party to which it has been sent, the notice period of 20 (twenty) days shall start to run, after the expiry of which it shall be considered that the Contract has been terminated.

If the Contract is terminated due to Force Majeure in accordance with provisions of paragraph 24.5.1 of this Article, the contracting parties shall do everything to respect all procedures necessary in

order to terminate all necessary actions of legal, technical, financial and other nature as soon as possible and in order for the transfer of property, right to use, technical documentation and all other documentation be realised in accordance with the provisions of this Contract.

Contract termination due to the contracting parties' agreement

This Contract can also be terminated by contracting parties' agreement. Should the Contract be terminated by contracting parties' agreement, the contracting parties shall draft and sign an agreement on termination in which they will solve all relations, i.e. obligations and rights, as well as all possible mutual claims; they also shall indicate the date of Contract termination in the agreement.

EARLY TERMINATION FEE

Early termination fee due to Contract termination by Contracting Entity's fault

Should this Contract be terminated due to:

a) Contracting Entity's fault; or
b) Contracting Entity's discretionary right;

the Provider shall have a right to early termination fee in the amount resulting from calculation in accordance with the provisions 25.1.2 of this Contract.

In cases referred to in Article 25.1.1, the Provider shall have a right to calculate the early termination fee in accordance with the provisions of this Article. In the aforementioned cases, the early termination fee shall equal the sum of the following costs/amounts:

a) The amount of debt towards Lenders in the moment of termination of the Contract (on the day of termination), which shall not be higher than the amount of outstanding debt (only debt which the Contracting Entity has approved and/or with which it has previously been informed on and which is related to the financing of the Measures for improving energy efficiency and additional non-energy services is acknowledged), possibly increased by interest due to irregular payment of loan instalments if this is the result/consequence of Contracting Entity's failure to regularly pay due calculated Fees. Moreover, the amount of the outstanding debt shall not be higher than the amount of outstanding debt defined in the Structure of financing (sheet Structure of financing, Investment Value, Annex 7 to the Contract), i.e. the Provider's tender on the day of termination. If, due to refinancing or reprogramming of the outstanding amount of project loan, in the moment of termination of this Contract, the amount of the outstanding loan debt is higher than the amount referred in the tender, i.e. defined in the Structure of Financing, it shall represent a risk of the Lender and of the Provider, and it shall in no case result in an increase of Contracting Entity's costs related to the termination of this Contract in comparison to the costs referred to in the tender (amount of debt towards Lenders can only be equal to or lower than the amount defined in debt repayment projections in the Structure of Financing).
b) The amounts of repayment of dividends or other forms of gains/income on the capital / own investment, i.e. foregone profit in accordance with the amounts referred to in the table Investment Value (Annex 7 to the Contract), including the remaining part of the share and/or outstanding part of the loan. The amounts of the foregone profit (repayment of dividends or other forms of gains/income on the capital) are calculated by discounting payments to shareholders (owners) from the basic Investment Value table (Annex 7 to the Contract) to the current value on the day of Contract termination. The amount of the foregone profit shall not result, after the values are calculated, in the Internal Rate on own capital being higher than the Internal Rate of return on own investments from the basic table Investment Value (Annex 7 to the Contract)
c) The amounts of foregone profit for early termination of commercial non-energy services that Provider would have if Contract would be still in place. Calculation of foregone profit would be calculated by independent expert based on real costs and incomes.

Early termination fee due to Provider's fault

If the Contracting Entity plans to terminate this Contract due to Provider's fault, the Contracting Entity shall pay an early termination fee to the Provider which will equal the professionally determined estimated fair/market value of the Contract.

If, in accordance with the provisions of the previous Article, a procedure of professional calculation of the estimated fair/market value of the Contract is activated, the following procedure shall take place:

a) During the professional procedure of calculation of the estimated fair/market value of the Contract, Fee calculation shall be in line with the provisions of this Contract. The Provider shall continue to provide the service and shall be obliged to fulfil all requirements in accordance with the Contract during the procedure.
b) By initiating this procedure, the contracting parties shall agree on appointing an independent expert competent in estimating the value of energy performance contracts. The contracting parties shall split equally the cost of engaging such a person. If the contracting parties do not agree on engaging an independent expert to estimate fair/market value of the Contract within 30 (thirty) days of the day of receipt of the Contracting Entity's written notice on termination of the Contract due to Provider's fault, dispute resolution procedures prescribed by this Contract shall apply;
c) In relation to the estimate of the fair/market value of the contract, be it by an expert for energy performance contracts appointed by the contracting parties or by procedures defined in the provisions on resolution of disputes between the parties to the Contract, the contracting parties agree that they shall apply the following principles and manner of its calculation:
    i. all foreseen future amounts in relation to the Project shall be calculated in nominal amounts and current prices;
    ii. all future payments of Fee (without the reduction, i.e. Offered Fee) which should be paid will be calculated and discounted on the planned day of Contract termination by applying the discount rate equalling the discount rate published by the …… on its official website;
    iii. sum of all estimated Contracting Entity's costs arising from the termination of the contract shall be calculated and discounted (by using the same discount rate as the rate in relation to the payment of fee) and shall be deducted from the amount referred to in the previous paragraph (discounted amount of all payments). These costs shall include:
        - estimated amount of risk assumption, regardless of whether the risks have been identified or foreseen in the tender or if they have arisen after the signing of this Contract;
        - estimated costs of service provision in the volume, standard and quality required by this Contract and by the Technical Requirements;
        - estimated costs of rectification of deficiencies and malfunctions, procurement of new necessary equipment or replacement of worn-out elements and equipment inherent to the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services and necessary in order for the Public Lighting System and additional non-energy services to satisfy the required standard (including all works, equipment, activities, designing and operative costs necessary in order to complete the reconstruction and/or modernisation or to introduce changes and/or improvements of the Public Lighting System and additional non-energy services in order for it to satisfy the standard requested by the Technical Requirements), in any case, the aforementioned estimated costs need to take into account that they shall ensure that the Public Lighting System and additional non-energy services to be in a state required by this Contract (full functionality of the Public Lighting System and additional non-energy services in line with the Technical Requirements), i.e. that the Measures for improving energy efficiency and additional non-energy services need to bring about the effects foreseen by this Contract and prescribed by the Technical Requirements and Tender;

- all fees paid to the Provider since the day on which the procedure is implemented up to the day of termination of this Contract;
- if the contracting parties cannot agree on the estimated far/market value of the Contract within the deadline agreed on the occasion of selecting the independent expert for the estimate of the fair value of the Contract (the deadline shall not surpass 60 (sixty) days of the day of expert appointment), the estimated value shall be determined by contracting parties' dispute resolution procedures defined by this Contract and by following the principles defined by this chapter, i.e. this Article;
- The Contracting Entity shall pay the amount equal to the estimated fair/market value of the Contract within 60 (sixty) days of the day on which it is determined, i.e. day on which the contracting parties agreed upon the amount and confirmed it in writing;
- Should it be determined that the amount of the fair value of the Contract is negative, i.e. lower than zero, the Provider shall be obliged to pay the aforementioned amount to the Contracting Entity also within 60 (sixty) days of the day on which it is determined, i.e. day on which the contracting parties agreed upon the amount and confirmed it in writing.

Early termination fee in case of termination due to Force Majeure

Should this Contract be terminated due to Force Majeure in accordance with the provisions of this Contract, the termination fee payable to the Provider shall equal the amount of the unamortised part of the Measures for improving energy efficiency of the Public Lighting System and additional non-energy services, which cannot be higher than the amount defined by the annex Investment Value, Amortisation Plan (Annex 7 to the Contract).

The early termination fee due to Force Majeure shall be payable within 60 (sixty) days of the day of termination of this Contract.

Early termination fee in other cases

Early termination fee due to the right to discretionary termination of the Contract by the Contracting Entity shall equal the termination fee due to termination of the Contract caused by the Contracting Entity's fault referred to in Article 24.3, which is also payable within the same deadline.

Early termination fee due to the termination of Contract by contracting parties' agreement and payment deadlines shall be determined by contracting parties' agreement.

DISPUTE RESOLUTION AND GOVERNING LAW

Dispute resolution

The contracting parties shall try to resolve amicably all disputes arising from or in relation to this Contract.

In case that the contracting parties cannot resolve disputes of technical nature by themselves, such disputes shall be forwarded to a third party for resolution or, if applicable, to a competent body. The third party or a competent body shall be jointly appointed by the Provider and the Contracting Entity by their unanimous decision within 15 days of the day on which the dispute has arisen. In case that the contracting parties do not reach an agreement on the third party or competent body which will resolve the dispute, the contracting parties shall resolve the dispute in line with the provisions of Chapter 26.2 of this Contract.

The decision of the third party or of the competent body shall be final and binding for the contracting parties and the fee for the third party's or the competent body's work shall be borne by the contracting party which loses the case. However, each contracting party shall bear its own expenses of legal representation and other expenses which do not represent the expenses of the fee for work of the third party or the competent body. In order to avoid any doubt, the contracting parties agree that the third party or the competent body referred to in Article 26.1.2 shall only solve disputes of technical nature. Other disputes shall be resolved in accordance with Article 26.2.3.

During the period of dispute resolution, beginning on the day on which the dispute arises and until the moment of adoption of a third party's or competent body's decision, all obligations arising from this Contract shall continue to be valid for both contracting parties. In case that the third party or the competent body fails to resolve the dispute, it shall be resolved in accordance with Article 26.2.3.

In case that the third party's decision in relation to the resolution of a dispute of technical nature and regarding the calculation of the Fee be in favour of the Provider, the Contracting Entity shall pay every amount of the fee which was previously disputed, as well as any legal interest rate on every such amount to the Provider, beginning from the day on which the dispute arises, i.e. from the due date of the disputed fee up to payment.

In case that the third party's decision in relation to the resolution of a dispute of technical nature and regarding the calculation of the Fee be in favour of the Contracting Entity, the Contracting Entity shall be free from the obligation to pay to the Provider the previously disputed part of the Fee, to which the decision of the third party in relation to the resolved dispute refers to.

In case that the third party's decision in relation to the resolution of a dispute of technical nature and regarding obligations arising from the MCC Implementation Phase, Designing Phase and Reconstruction and/or Modernisation Phase be in favour of the Contracting Entity, the Provider shall rectify all deficiencies due to which the dispute has arisen. In that case, the deadlines for the completion of reconstruction and/or modernisation of the Public Lighting System, i.e. deadline for the planned Adoption of Measures for improving energy efficiency and additional non-energy services shall be prolonged for the number of days corresponding to the duration of dispute resolution (selection of the third party or competent body increased by the number of days necessary for it to reach a decision) if the Contracting Entity does not decide to additionally prolong the deadline without prolonging the total term of this Contract. In case that the aforementioned deficiencies are not rectified by the new deadline, the

Contracting Entity shall have the right to unilaterally terminate the contract due to Provider's fault and collect the bank guarantee referred to in Article 19.1.1.

In case that the third party's decision in relation to the resolution of a dispute of technical nature and regarding obligations arising from the MCC Implementation Phase, Designing Phase and Reconstruction and/or Modernisation Phase be in favour of the Provider, the Contracting Entity shall immediately fulfil its obligations in accordance with the Contract and the deadline for the planned Adoption of Measures for improving energy efficiency and additional non-energy services shall be prolonged for the number of days corresponding to the duration of dispute resolution (selection of the third party or competent body increased by the number of days necessary for it to reach a decision), if necessary, i.e. if the Provider requests it, and the term of this Contract shall be prolonged for the corresponding number of days in order to ensure that the Provider receives the initially planned number of monthly Fees, i.e. does not suffer any damage. Moreover, the Contracting Entity shall compensate the Provider for all real and proved expenses, i.e. damage that the Provider has suffered due to the initiation of the dispute (excluding the costs of representation in the dispute).

Governing law and jurisdiction

This Contract has been drafted in accordance with the regulations of the …… and shall be interpreted accordingly.

The contracting parties shall try to resolve amicably all disputes, differences or requests arising from or related to the Contract.

Should it not be possible to resolve amicably the disputes, differences or requests arising from or related to the Contract, they shall be resolved in front of the court of the ……..in …… with territorial and subject matter jurisdiction.

In the event of possible disagreement or varying interpretation of the ……. and English version of this Contract, its annexes and other documentation, only the …….. version shall be applicable.

Severability clause

The contracting parties agree that in case of nullity, voidness or unenforceability of any provision of this Contract, such a null, void or unenforceable provision shall not have any impact on the validity of other provisions of this Contract. The contracting parties agree that, instead of a null, void or unenforceable provision of this Contract, and in order to rectify deficiencies, a valid, i.e. enforceable substitute provision in accordance with the will of the contracting parties expressed in this Contract, which is as close as possible to the economic purpose of the null, void, i.e. unenforceable provision and the whole Contract, shall be implemented.

BASIC INFORMATION ON THE CONTRACTING PARTIES

The Contracting Entity shall pay the Fee for the provided service to the Provider into the following account:
IBAN……..,
SWIFT/BIC……..…..,
open in ……. bank.

In case of payment of Provider's performance guarantee cash deposit during the Designing or Use Phase, it is necessary to indicate:

Contracting Entity: ……..,
Business bank: …….
IBAN: …….
Model: ……,
Reference number: ……,
Description of payment (payment purpose: deposit – performance guarantee – indicate the subject of procurement and procurement reference number).

The contracting parties shall, immediately after signing this Contract, and at the latest within 15 (fifteen) days, appoint a person and/or person authorised for representation of each contracting party and for management of this Contract on their behalf, and submit a written notice thereon to the other contracting party.

All notifications and official correspondence between the contracting parties shall be in writing and delivered in the following manner:

For the Contracting Entity:

……

For the Provider:

……..……..……

The contracting parties shall deliver the written correspondence by registered mail with acknowledgement of receipt or personally by courier service with the indicated day of receipt which shall be considered the day of receipt of the notice for the needs of interpretation of provisions and deadlines indicated in this Contract or via the official e-mail.

Other correspondence, which does not refer to the notices on the intention to terminate the Contract sent by one contracting party to the other, warnings or any other notices related to the deadlines defined by the provisions of this Contract, i.e. correspondence related to everyday operative issues, can be delivered in the manner described in the previous Article or by registered Contracting Entity's and Provider's e-mail:

For the Contracting Entity:

……

For the Provider:

……

Each contracting party shall immediately inform the other contracting party on any change of official address, authorised and appointed persons managing the Contract or representing the contracting parties, as well as on any change of e-mail, account number etc. In case that any contracting party fails to inform the other contracting party on changes of official address, authorised and appointed persons in accordance with this Contract, the notifications to the other contracting party shall be delivered to the address and authorised and appointed persons known up to that moment.

FINAL PROVISIONS

Annexes

The following annexes to this Contract form an integral part thereof:

Annex 1 Project Scope
(The description of the Contracting Entity's overall public lighting system, i.e. information on the elements of the public lighting system and the lighting classes of roads and public areas to which the Measures for improving energy efficiency and additional non-energy services are to be applied . It consists of two attachments – a table view of public lighting system elements with indication of positions for additional non-energy services and the Report on the Lighting classes of roads and other public areas);

Annex 2 Public Lighting System Reference Condition
(includes reference data (installed active power, consumption, costs and the reference number of operating regime) for the public lighting system before applying the Measures for improving energy efficiency of the public lighting system and additional non-energy services in order to make it possible to identify the reference energy and cost savings in a verifiable and measurable way);

Annex 3 Technical Requirements
(defines the technical requirements and the standards that the implementation of Measures for improving energy efficiency of the public lighting system and implementation of additional non-energy services should meet. The annex is divided into four key parts according to the specific requirements in each phase (period) of the Contract execution: PART A – Minimum technical requirements and standards of service that have to be maintained in every phase of the duration of the Contract; PART B – Requirements during the phase of implementation of the MCC and the Designing Phase; PART C – Requirements during the Reconstruction and/or Modernisation Phase; PART D – Requirements during the Use Phase)

Annex 4 Monitoring, Measurement and Verification Plan
(M&V Plan which, among other things, defines the responsibilities, dynamics of monitoring, measuring and verification, fee adjustment procedures, specifications for measuring devices for conduction measurements);

Annex 5 Content of the Report, Agreement and the Records
(templates for reports, agreements and records in particular phases of duration of the Contract)

Annex 6 Tender
(Tenderer's tender);

Annex 7 Investment Value
(Defined in the Tenderer's (Provider's) Tender according to the predefined obligatory forms - it comprises Investment Value, Structure of Financing, Amortisation Plan);

Annex 8 Payment Plan and Savings Plan
Defined in the Tenderer's (Provider's) Tender according to the predefined obligatory forms – it comprises the predefined Reference Condition filled out by the Contracting Entity, Input Data filled out by the Tenderer, and the Fee Payment Plan and Savings Plan automatically generated according to the input data);

Annex 9 Plan of implementation of the Measures for improving energy efficiency and of additional non-energy services
(Defined in the Tenderer's (Provider's) Tender)

The order in which the documents are to be interpreted in the event of discrepancy or conflict:

1. Contract;
2. Annex 3 to the Contract - Technical requirements

3. All other Annexes to the Contract;
4. Tender Documentation;
5. Tenderer's Tender.

Number of copies

This Contract has been drawn up in 4 (four) identical copies, 2 (two) of which shall be kept by each of the contracting parties.

[signature place and date to be inserted]

For the Contracting Entity:

……
(stamp and signature of the person authorised for representation)

For the Provider:

.....
(stamp and signature of the person authorised for representation)

(Contracting Entity)

Energy Performance Contract
Annex 1 Project Scope

Client needs to specify Project scope. A *suggested* template of agenda is provided:

Contents

(Contracting Entity)

Energy Performance Contract
Annex 2 Public Lighting System Reference Condition

Client needs to specify Project scope. A *suggested* template of agenda is provided:

Contents

(Contracting Entity)

Energy Performance Contract
Annex 3 Technical requirements

Energy Performance Contract – Technical requirements document also available in PDF format here.

Contents:

Introduction

Smart EPC output specification (e.g. **technical requirements**) represents an integral part of the Energy Performance Contract defining the technical requirements for the implementation of the measures for improving energy efficiency and standards that should be met by implementing additional energy and non-energy related services in public lighting.

Smart EPC output specification (technical requirements) is divided into four key parts (A, B, C and D) according to the specific requirements in each phase (period) of the EPC contract duration:

- **PART A – minimum technical requirements and service standards (should be maintained in every phase of EPC contract implementation)**
- **PART B – design and implementation phase**
- **PART C – reconstruction and/or modernisation phase**
- **PART D – use phase**

Note: the texts in red distinguish aspects dependent on national context.

Part A of the Output specification – minimum technical requirements and service standards

In this part of Smart EPC technology output specification, minimum technical requirements and service standards are set for every phase of the duration of the EPC Contract. EPC service Provider is obliged to maintain them during the entire duration of the EPC Contract.

Minimum technical requirements for equipment and material

Below listed are the minimum technical requirements that need to be met in all EPC contract implementation phases (periods). The minimum technical requirements refer to the subject of implementing the energy efficiency improvement measures.

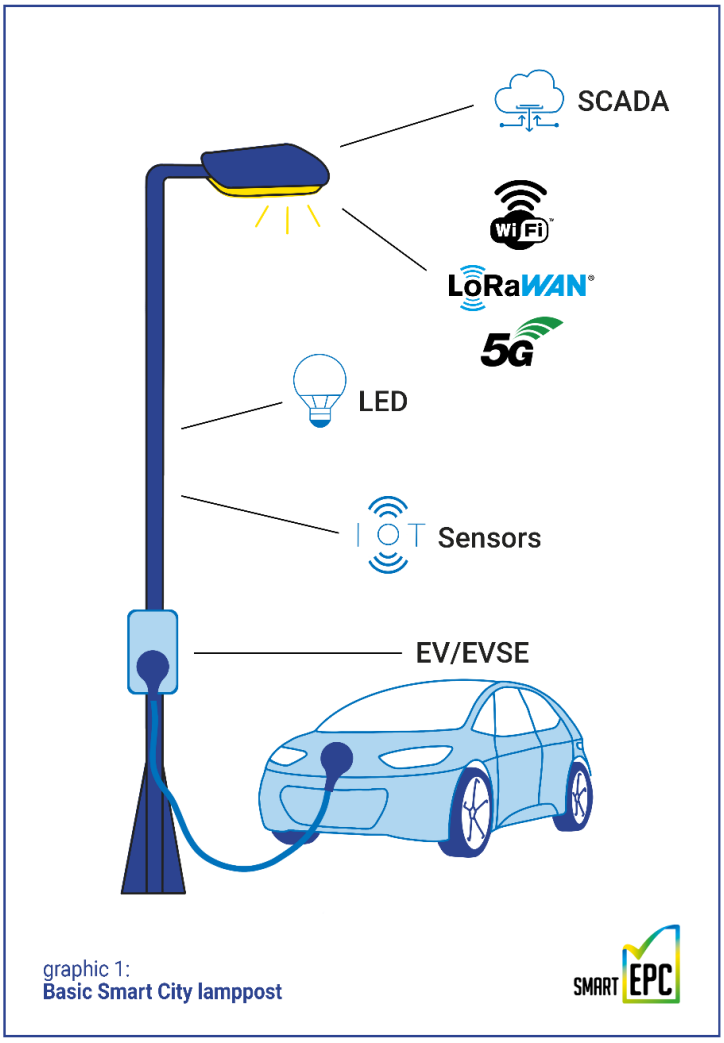

Image1.1 Overview of the subject of the implementation of the Measures for improving energy efficiency

Legend:

A- Luminaire with equipment for post attachments (bracket/arm) and Communication module for two-way data transfer between the MCC and the luminaire.

B- Management and Control Centre and the wireless network infrastructure for two-way data transfer between the MCC and the luminaire (hereinafter referred to as: MCC application

Technical requirements for the luminaire and related luminaire equipment (A)

Table 1 A list of general technical requirements for the luminaires

Requirement number	Requirement description	Limitation
Requirement 1	**General requirements for the luminaire**	
1.1	Upward light output ratio (*ULOR*)	0%
1.2	Electric shock safety class	Class II for wooden and concrete poles; Class I for iron poles
1.3	Inspection of products, manufacturers, manufacture process carried out, i.e. a certificate proving that the manufacture process is checked periodically and that it takes into account the manufacture verification test in addition to the verification of compliance of products with the requirements of the European safety standards harmonised with the requirements of European directives and standards	
1.4	Compliance with the Directive 2014/30/EU of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (EMC Directive, *Electromagnetic Compatibility*)	

Table 2 A list of technical requirements for the luminaire housing

Requirement number	Requirement description	Limitation
Requirement 2	**Requirements for the luminaire housing**	
2.1	Level of protection of the luminaire against the ingress of solid objects and liquids (IP protection code)	Min. IP66
2.2	Level of protection of the luminaire against mechanical impact (IK protection code)	Min. IK08
2.3	Integrated luminaire socket for connecting the communication module and/or sensor or actuator	Fitting in accordance with the Zhaga standard or equivalent[3] with all necessary wiring
2.4		Min. two sockets - one on the top of the luminaire for the communication module and one on the underside of the luminaire for the sensor or actuator

[3] In all parts of this document where the Zhaga standard is mentioned, the use of an equivalent or better connector is allowed, with the criteria for equivalence being:

- the possibility of connecting a communication module and sensor or actuator of a larger number of manufacturers;
- fitting the connectors prescribed by open standards accessible to everyone;
- fitting the connectors with min. 4 pins:
  - 24 VDC power supply
  - DALI 2.0, positive polarity,
  - joint pin for DALI 2.0 negative, power supply grounding, General Digital IO (input/output) grounding,
  - LSI (logical signal input).

2.5		Supplied with weather-resilient covers, with min. IP66 protection level if the modules have not been fitted yet
2.6	Light source protection	Flat glass
2.7	Structure modularity	Luminaire housing service cover connected without a screw connection with the luminaire and possible to be opened without the use of tools. The cover does not detach itself from the housing when opened
2.8	Housing material	Diecast anti-corrosion aluminium with <0.5% copper content
2.9	Housing sealing ring	Silicone or PTFE or equivalent (thermal and chemical stability, elasticity) sealing ring
2.10	Housing volume	Enough space for separate surge protection device and two integrated sockets for connecting the communication module and/or sensor or actuator

Table 3 A list of technical requirements for the driver

Requirement number	**Requirement description**	**Limitation**
Requirement 3	**Driver**	
3.1	Input voltage	230 V AC ± 10%
3.2	Frequency	50 Hz
3.3	Power factor	When luminaire is dimmed to 75% of the nominal luminaire power, cos ϕ ≥0,95 is maintained
3.4	Lifetime at 10% failure (B10)	Min 100,000 hours
3.5	Nominal driver output current	≤750 mA
3.6	Constant Lumen Output within the luminaire lifetime (CLO)	
3.7	Compatibility with DALI 2.0 extended two-way communication protocol	
3.8	Available DC 24V supply for the communication module and sensor or actuator	
3.9	Possibility for simultaneously connecting the communication module and the sensor (i.e. actuator) module to the feeder (24 VDC) and communication (DALI 2.0) driver lines	
3.10	Possibility of a two-way transfer of data from the Management and Control Centre via the communication module to the driver and the sensor, i.e. the actuator, and vice versa	
3.11	Internal memory storing the measured data of enough storage capacity to be able to store 48 hour recorded data	
3.12	Installed surge protection at the input circuit	
3.13	Possibility of online access to the technical data of the driver via the Management and Control Centre	
3.14	Inrush current limitation circuit	

3.15	Over temperature protection device that reduces the LED module supply current if the Tc temperature exceeds the nominal product values
3.16	Possibility of reading luminaire energy parameters (current, voltage, power, energy consumption, number of operating hours etc.), with the allowed uncertainty of measurement of maximum 1% for the measuring of active power

Table 4 A list of technical requirements for the LED module

Requirement number	Requirement description	Limitation
Requirement 4	**LED module**	
4.1	Corelated colour temperature	≤ 3000 K
4.2	Corelated colour temperature in Natural protected areas in compliance with the regulation	≤ 2200 K
4.3	Colour rendering index (CRI)	≥ 70
4.4	Environmental requirements	The newly fitted luminaires need to be classified into group RG0, RG1 or RG2 in compliance with ..... EN 62471:2010 or equivalent. The RG2 group luminaires not be fitted into the positions where the distance between the luminaire height and the observer is smaller than the minimum safety threshold defined by the test report pursuant to IEC TR 62778:2014 or equivalent.
4.5	Environmental requirements	G – index ≥ 1.5 With exception G – index ≥ 2 in Protected areas in compliance with the regulation
4.6	Light source lifetime of L90[4]	Min. 100,000 hours
4.7	Possibility of thermal imaging of the module and the driver	
4.8	Automated LED bridge of a non-functioning module	

Table 5 A list of technical requirements for surge protection

Requirement number	Requirement description	Limitation
Requirement 5	**Surge protection**	
5.1	Integrated surge protection in the driver	Class III device pursuant to ..... EN 61643-11 or equivalent with 6 kV protection
5.2	Separate surge protection in the luminaire housing	Class II or Class II + III device pursuant to ..... EN 61643-11 or

[4] The test report needs to show the lifetime of the LED light source at L90, by applying the methodology defined in the instructions within IES TM 21-2011 (Projecting Long Term Lumen Maintenance of LED Light Sources), or equivalent, with the parameters corresponding to the offered luminaires (colour temperature, LED module supply current, LED module operating temperature (tc)) at 25°C ambient temperature (ta)

		equivalent with the protection of 10 kV

Table 6 A list of technical requirements for the brackets/arms

Requirement number	Requirement description
Requirement 6	**Luminaire brackets/arms**
6.1	Surface protection done by hot-dip galvanisation
6.2	Maximum length up to 15% of the pole height Installation of the overweight is allowed only if the width of the illuminated area is larger than the product of the 1,3 factor and the height of the existing luminaire and in that case the overweight of a maximum height of 10% of the pole height is allowed.
6.3	Maximum arm inclination in relation to the horizontal plane +5°
6.4	Integrated attachment for installing plugs
6.5	Air network necessitates the installation of Plugs – male jacks for public lighting with minimum characteristics: - minimum IP66 protection, protection from unplugging the male jack from the plug, min 16 A max 250 V, connection with no possibility to replace contacts, cable installed – PP00 3×1.5 mm2 – 1.5 m

Specific technical requirements are defined for Urban luminaires in the table below (Table 7) In the case that the Specific technical requirements listed in the table below (Table 7) differ from the requests listed in the other tables (Table 1, Table 2, Table 3, Table 4,
Table 5, Table 6, Table 8), the requests from the table below (Table 7) shall be applied. The above mentioned is only valid for Urban luminaires in accordance with the definition in Annex 1 of the Contract.

Table 7 A list of technical requirements for Urban luminaires

Requirement 7	Specific requirements for Urban luminaire	Limitation
7.1	Colour rendering index (CRI)	≥ 80
7.2	Light distribution	Possibility of fitting symmetric and roto-symmetric (circular symmetric) optics
7.3	Integrated luminaire socket for connecting the communication module	Fitting in accordance with the Zhaga standard or equivalent[1] with all necessary wiring
		One socket for the communication module
7.4	Housing shape	In a horizontal cut view, the luminaire housing must be of a circular or elliptical shape

Table 8 A list of technical requirements for the communication module

Requirement number	Requirement description
Requirement 8	**Communication module and antenna**
8.1	Possibility of fitting onto the upper side of the LED luminaire housing via a Zhaga socket or equivalent[1], on condition of maintaining minimum IP66 housing protection against harsh weather conditions

8.2	Direct access and availability via wireless networks
8.3	24 VDC supply connector from the luminaire driver via integrated socket
8.4	Module electric power of up to 0.5W
8.5	Communication with the driver and the sensor, i.e. the actuator, via two-way DALI 2.0
8.6	Internal memory accessible through the Management and Control Centre with storing the measured data of minimum 2MB for saving recorded data from the driver and sensor and/or actuator
8.7	Two-way communication with the MCC (receiving orders from the MCC and access to the technical data from the driver through the Management and Control Centre)
8.8	Own identification address

The technical solution must have the possibility of subsequent sensor and/or actuator installation according to the plug and play principle without any additional costs of luminaire and communication module adjustment, i.e. without additional costs of wiring, supplying, reading data from the sensor and/or sending data to actuator and the Management and Control Centre.

Information on data transferred between the luminaire and MCC

Communication between each luminaire and MCC shall be two-way, i.e.:

a) Sending data from the MCC to the luminaire
- DATA TYPE
  - dimming regime (control of the output luminous flux of the luminaire),
  - controlling the luminaire (switch on/off/setting the time delay for switching on the luminaire),
  - driving the actuator;
- FREQUENCY: irregularly as requested by the Contracting Entity;

b) sending data from the luminaire to the MCC
- DATA TYPE
  - Voltage (V);
  - Current (I);
  - current active power (W);
  - Cos fi;
  - Current dimming regime;
  - Luminaire diagnostics;
  - Exact time of data reading
  - other data from the luminaire as requested by the Contracting Entity;
  - data from the sensor that will be installed according to the Contracting Entity's needs.
- FREQUENCY: minimum once in 24 hours, frequency of data transfer must be in accordance with internal memory of the control device where data stated above is stored (if internal memory is not big enough to store data stated above for 24 hours than data sending frequency must be more often)

c) sending data from the luminaire to the third application which the Contracting Entity shall subsequently provide information on:
- DATA TYPE
  - Voltage (V);
  - Current (I);
  - Operating power (W);
  - Cos fi;

  - luminaire failure code;
  - miscommunication;
  - Current dimming regime;
  - Exact data upload time;
  - Luminaire diagnostics;
  - record from the ripple control receiver on switching the Public Lighting System on
  - data from the sensor that will be installed according to the Contracting Entity's needs.
- FREQUENCY: two times a day during the public lighting operating hours (around 750 times a year per luminaire).

The Contracting Entity retains the right to increase the data transfer quantity on particular luminaires on the account of the decreased data transfer quantity on other luminaires in the Public Lighting System, as long as the data transfer quantity stays within the limits set in this chapter.

Technical requirements for the Management and Control Centre (B)

Purpose of the Management and Control Centre (MCC)

The purpose of the Management and Control Centre (hereinafter referred to as: MCC) is to provide to the Contracting Entity and the Provider an access to relevant data that will enable the systematic monitoring and control of the Energy Performance Contract (proof of availability), an automated way of adjustment of the Fee in the Energy Performance Contract and enable dynamic control of the public lighting system management and regulation.

The MCC shall enable:

- Uploading of static data about the public lighting system;
- Uploading of dynamic data from luminaire communication modules;
- Archiving of all collected data;
- Display of uploaded and archived data (in line with the search by the user criteria);
- Sending data to luminaires for the purpose of managing and regulating the public lighting mode of operation (of single or grouped luminaires);
- Review, reporting and analysis of the uploaded data for the purpose of establishing the availability level (number of failures, number of luminaires operating on the power greater than guaranteed etc.);
- Calculation of fee adjustment based on the collected data;
- Supervision and reporting for the purpose of tracking work orders when the system is inaccessible (for example elimination of failures etc.) and obtaining automatic calculation of a fee adjustment;
- Planning and supervision of future public lighting maintenance, upgrade and expansion activities;
- Interactive user support for the Contracting Entity (24h a day all 365/6 days of the year) for the entire term of the contract;
- upgrading the software for uploading, analysing and reporting on the basis of data gathered from the sensor that will be connected to the integrated sockets on the luminaire;
- controlling actuators which will be connected to the integrated sockets on the luminaire;
- Integration of the Contracting Entity's existing software systems.

Application setup of the Management and Control Centre

The MCC has to be made with open source programmes that are based on use and support of open standards that enable connecting with other programme solutions of the Contracting Entity, as well as exchanging data between programme solutions between the Contracting Entity's various information systems. There has to be a possibility of using open source developing tools, due to the specificity of the application and the possibility of use on various operating systems; the software has to be multi-platform. (OPTIONAL - The MCC has to be based on open-source software, i.e. the Contracting Entity must have access to the source code and the ability of free use, study, modification and improvement of the original software code.)

As requested by the Contracting Entity, the MCC has to enable the integration of up to 250,000 of luminaires that are not in the scope of implementation of the Measures for improving energy efficiency, but with which the Contracting Entity shall have the same functionality with as with the luminaires in the scope of implementation of the Measures for improving energy efficiency of the Public Lighting System.

The system should be made in microservice architecture, i.e. based on smaller software components with clearly defined business functionalities with every action functioning individually. The gathered data from referential devices have to be stored in NoSQL type data base adjusted to store large quantities of data comprised of "time and value" pairs. System components (data base, channels, message, services) have to be made as distributed services with ensured ability of redundant operation (the system continues to operate in the event of a single network node crash) and horizontal scaling of each component depending on transfer volume. MCC architecture shall be a microservice architecture, with docker based installation approach onto the cloud data centre. The system should be executed as a series of modules that can be individually scaled in a horizontal way.

The system has to operate 24/7, therefore it is necessary to ensure redundant operating mode whose redundant modules shall ensure that the MCC continues to operate in the case of a primary module failure.

The use of globally accepted standards for central management sites of the interface for configuration, command, control and supervision of heterogeneous outdoor lighting networks is obligatory.

The MCC layering is planned in four abstraction layers:

- 1st level (equipment) – elements of the public lighting system and location data with descriptive attributes (lighting resources)
- 2nd level (application) – a communication system for remote measuring and control (information from the luminaire and management resources of the luminaire);
- 3rd level (application) – a business system for the planning, proactive maintenance and service management;
- 4th level (application) – presentation layer, i.e. business system for reporting, planning, control and management.

Application support comprises a number of mutually integrated layers, with each of the 'layers' being in charge of a specific segment in the value chain, while at the same time being accountable to some of the architecture levels. The basic, i.e. the lowest layer at which the processes take place represents the existing or future components of the asset (luminaires).

The first application layer covers the first level with a record of all public lighting system data (location, technical properties, maintenance records etc.), and the second level related to the supervision and control infrastructure with public lighting system elements, collecting data from the sensor, processing them in real time and monitoring the service parameters in line with the defined

actions and algorithms. This layer initiates certain public lighting system management operations and/or actuators connected to the luminaire. This layer has a direct interface with management functions on the system monitoring and control devices.

The second application layer exchanges certain operational and business data with the first application layer, processes them, establishes their operational relevance, and on the basis of smart algorithms and defined contractual obligations undertakes operational steps it can send to the first application layer or to the Contracting Entity/Provider. This layer serves as an 'umbrella' for all operating processes and orchestrates the processes relevant for the delivery and maintenance of both basic and control infrastructure. The second application layer connects technical data and transforms them into business data used for calculations and reporting. The first and the second layer are used for real time reporting to the client.

The third application layer receives data from the second one and processes them in order to manage the supporting services. This layer covers contract management, alerts (defects, malfunctioning, deviations from parameters), maintenance (preventative and corrective) and space/location management. It needs to provide necessary access (API) to the rest of the Contracting Entity's systems, as well as the functionalities needed for visualisation, planning, control and management.

The fourth application layer is the presentation layer for the user used for reporting (report on operating power, report on the consumption of electrical energy, and other reports as requested by the Contracting Entity), planning (dynamic site planning and estimating the electrical energy consumption and costs on the basis of collected data), control (via user web portal) and management of the entire system and pertaining teams.

IP device communication with the application has to be supported. It is necessary to use standard communication protocols such as UDP, TCP, HTTP, MQTT, COAP, oneM2M.

Functionalities of the Management and Control Centre

This chapter lists the MCC application modules with the basic functionality that every module has to have. The MCC functionality stated in this chapter is reinforced with the Monitoring, measurement and verification (Annex 4 to the Energy Performance Contract).

- Module 1 – Static data
- Module 2 – Long-distance data reading
- Module 3 – Data archiving
- Module 4 – Data representation
- Module 5 – Sending data in order of managing operating and dimming regime of the public lighting
- Module 6 – Alarms
- Module 7 - Reports and calculations
- Module 8 – Control module
- Module 9 – Planning and supervision of the public lighting system
- OPTIONAL
    - Module 10 – Receiving and processing sensor applications data (parameters, consumption, working time, etc.)
    - Module 11 – Receiving and processing data from the EV chargers (consumption, working time, etc.)
    - Module 12 - Receiving and processing data from other consumers (5g, communication technologies, etc.) (consumption, working time, etc.)

- Module 13 – Receiving and processing intelligent transport applications data (parameters, traffic congestion, street light data, power consumption, working time etc.)

Technical requirements for communication technologies

Minimum technical requirements for communication technologies (5G street side solutions) are listed below.

Requirement number	Requirement description	Limitation
Requirement 1	**General requirements for the street radio station**	
1.1	TX/RX	4T 4F FDD
1.2	LTE Carriers support	Up to 6 LTE Carriers
1.3	Band support	Separate radio cores for B2/25 and B66a
1.4	IBW	Full band support (70Mz, 65MHz for B66a and B2/25)
1.5	TCBW	Full band support
1.6	IP Rating	Min. IP 65
1.7	Operating temperature	-40°C to +55°C
1.8	NBIOT Support	In-band, Guard band and Standalone
1.9	Compact design	Virtually unseen from street level
1.10	Compatible power source	360M NEMA (or ZAGA) streetlights globally or equivalent
1.11	Dimension	Up to 414x239x99 mm
1.12	Weight	Up to 7.5 kg
1.13	Power supply	Nominal 110V to 480V AC 50/60Hz
1.14	Power source	Through ANSI C136.41 NEMA Connector , Thaga socket or equivalent
1.15	Avg. power consumption	Up to 120W
1.16	Integrated radio core	4T4R micro radio core inside
1.17	Integrated antenna	4x4 MIMO Antenna designed for streetlight deployment
1.18	Internal sensors	Tilt, vibration and ambient light
1.19	External sensor connectivity	Via DALI Interface or equivalent
1.20	Location awareness	Integrated GPS

In addition to the above, the street side solution should have the following programmable parameters, utility data module functions and power meter specifications

- Customer device management
- Scheduling controls
- Alert thresholds
- Photocell thresholds
- Fault detection
- Tilt detection
- Vibration detection

- Power loss after power failure
- Network communication failure
- Voltage swag and swell detection
- IOT data transmission & reporting
- Remote firmware upgrades
- Accuracy and verification
- Line voltage and accuracy
- Current accuracy
- Power
- Energy consumption
- On / off cycles
- Running hours

Technical requirements for integrated lamppost EV charging

Minimum technical requirements for EV charging are listed below.

Table 9 A list of technical requirements for the communication module

Requirement	EV charging
9.1	Operating voltage 230 V, singe phase
9.2	Input frequency 50 Hz
9.3	Air cooled to protect the equipment against temperature hazards
9.4	Mushroom headed push button for emergency stop switch (OPTIONAL)
CHARGING POWER OUTPUT	
9.5	Sum of the power output of all chargers powered from same distribution cabinet must be lower than available power of the distribution cabinet
9.6	Chargers must have capabilities to be connected via load management software (directly through CPO and/or third-party load management system). The power output of each charger must be able to reduce depending on the available capacity (capacity from the distribution cabinet decreased by the power of working luminaires and other chargers)
COUPLER	
9.7	The point of connection to the EV (Coupler) is of robust design and compliant with IEC 62196-1 & IEC 62196-3 or equivalent or higher standards.
9.8	Not rated for disconnection under load: locking mechanisms are used to safeguard against this event alongside a timed turn off for unintended cut off.
9.9	Easy to use and ergonomic in design whilst offering reliability and resilience to their use.
9.10	The minimum service life is no less than 10,000 charging sessions.
9.11	Public metered AC outlet and the vehicle connector outlet to have provision for locking mechanism during charging to ensure the safety of the cable
CHARGE POST	
9.12	IP54 ingress protection or better (according to IEC 60529:1989) and an IK 10 impact rating or better
9.13	Equipped with tilt switches capable of safely shutting down and isolating all incoming electrical feeds to the charge post. (OPTIONAL)

9.14	Fitted with appropriate filters to combat EMC and EMI interferences. Appropriate filters should be used as part of the charge post design to afford protection against propagated emissions and common mode currents. As a minimum charge post must comply to IEC 618-51-21-2 or local equivalent standards or higher standards.
9.15	Provided with the facility to using either a wireless (SIM) or wired (LAN) configuration to provide connectivity to the internet. (OPTIONAL: PLC)
9.16	Capable of having firmware remotely updated
9.17	Compliant with OCPP 1.6 JSON communication protocols (and all future versions of such) to allow a charge post operator to perform at a minimum core, firmware management, smart charging, local auth list management, remote trigger and reservation profiles.
9.18	Capable of being remotely monitored, diagnosed and maintained by a suitable qualified charge post operator.
9.19	Metering device complies with all applicable regulations to include set functionality, accuracy, security and cybersecurity standards
9.20	2% accuracy according to EN 50470-1/3
9.21	Plug-and-charge ready, specifically in accordance with the requirements of ISO15118-1 and all future editions of such.
9.22	Payment via UPI compliant mobile application payment or via mobile phone application
9.23	On board connector Type 2
9.24	Charging mode 3 EN 61851-1

Technical Compliance Requirements

For charge posts complying to IEC Standards
IEC 61851-1:2010 Electric vehicle conductive charging system - Part 1: General requirements
IEC 60364-5-54:2011 Low-voltage electrical installations
IEC 61140 Protection against electric shock - Common aspects for installation and equipment
IEC 61439-1:2011 Low voltage switchgear and control gear assemblies
IEC 61557-8 Electrical safety in low voltage distribution systems up to 1000 V AC and 1500 V DC
IEC 61558-1:2005 Safety of power transformers, power supplies, reactors and similar products
IEC 62196-3 Plugs, socket outlets, and vehicle couplers - Conductive charging of electric vehicles
IEC 62196-3 Plugs & Couplers

For electrical equipment complying to IEC Standards
IEC 60076 Power transformers
IEC 60076-1, Power transformers Part 1: General
IEC 60076-2, Power transformers Part 2: Temperature rise for liquid-immersed transformers
IEC 60076-3, Power transformers Part 3: Insulation levels, dielectric tests and external clearances in air
IEC 60076-5, Power transformers Part 5: Ability to withstand short circuit
IEC 60076-7, Power transformers Part 7: Loading guide for mineral-oil-immersed power transformers
IEC 60076-10, Power transformers Part 10: Determination of sound levels
IEC 60076-11, Power transformers part 11: Dry-type transformers
IEC 60076-12, Power transformers Part 12: Loading guide for dry-type power transformers
IEC 60085, Electrical insulation Thermal evaluation and designation
IEC 60270, High-voltage test techniques partial discharge measurements

IEC 60332-3-10, Tests on electric cables under fire conditions—Part 3-10: Test for vertical flame spread of vertically-mounted bunched wires of cables—Apparatus
IEC 60529, Degrees of protection pro-vided by enclosures (IP Code)
IEC 60721-3-4, Classification of environmental conditions—Part 3: Classification of groups of environmental parameters and their severities—Section 4: Stationary use at nonweather protected locations
IEC TS 60815-1, Selection and dimensioning of high voltage insulators in-tended for use in polluted conditions Part 1: Definitions, information and general principles
IEC 61378-1, Converter transformers Part 1: Transformers for industrial applications
IEC 62271-202, High-voltage switchgear and control gear—Part 202: High-voltage/low-voltage prefabricated sub-station
ISO 12944-6, Paints and varnishes corrosion protection of steel structures by protective paint systems Part 6: Laboratory performance test methods.
IEC 60068-3-3, Environmental testing Part 3-3: Guidance seismic test methods for equipment
IEC 60071-1, Insultation co-ordination-Part 1: definitions, principles and rules
IEC 60071-2, Insulation co-ordination Part 2: Application guidelines
IEC 61439-1, Low-voltage switchgear and control gear assemblies Part 1: General rules
IEC 61439-2, Low-voltage switchgear and control gear assemblies Part 2: Power switchgear and control gear assemblies
IEC 61439-3, Low-voltage switchgear and control gear assemblies Part 3: Distribution boards intended to be operated by ordinary persons (DBO)
IEC 61439-6, Low-voltage switchgear and control gear assemblies Part 6: Busbar trunking systems (busways)
IEC 61439-7, Low-voltage switchgear and control gear assemblies Part 7: Assemblies for specific applications such as marinas, camping sites, market squares, electric vehicle charging stations
IEC 62271-1, Common specifications for AC switchgear & control gear
IEC 62271-100, AC circuit-breakers
IEC 62271-102, Alternating current disconnectors and earthing switches
IEC 62271-103, Switches for rated voltages above 1 kV up to and including 52 kV
IEC 62271-200, AC metal enclosed switchgear and control-gear for rated voltages above 1 kV and up to and including 52 kV
IEC 62271-206, Voltage presence indicating systems for rated voltages above 1 kV and up to and including 52 kV
IEC 61869-2, Additional requirements for current transformers
IEC 61869-3, Additional requirements for inductive voltage transformers
IEC 61243-5, Voltage detecting systems (VDS)
IEC 60529, Degrees of protection provided by enclosures (IP Code)
IEC 60376, Specification of technical grade Sulphur hexafluoride (SF6) and complementary gases to be used in its mixtures for use in electrical equipment
IEC 60044-8, Instrument transformers - Part 8: low power current transducers
IEC 60255, Measuring relays and protection equipment

Technical requirements for Smart City applications

Minimum technical requirements for environment sensors are given below.

Requirement number	Requirement description	Limitation
Requirement 1	**General requirements for environment sensors**	

1.1	Stations for monitoring air quality, weather and noise level must support sending data to a central system for collecting and storing readings via Ethernet, 3G/4G, Wi-Fi or 5G
1.2	Measuring stations must support reading parameters at least every 60 seconds, and sending data to the central storage system at least every 15 minutes (variable from 1 min to 1 h).
1.3	The measuring stations management system must provide access to the read data via a web service or programming interface (API).
1.4	The measuring stations management system must support verification and automatic verification of read data in order to remove irregular or incorrect readings.
1.5	Measuring stations must have an authorized service center on the territory of the EU.
1.6	Statement on calibration of measuring stations on the territory of the EU, certified by the equipment manufacturer
1.7	The bidder must provide service and technical support for the entire duration of the warranty period, and is obliged to respond to service intervention within 24 hours from the day of receiving the call for service intervention
1.8	The bidder must ensure the replacement of defective electrochemical sensors and any malfunctions within 72 hours of the application.
1.9	Stations for monitoring air quality, weather and noise level must support sending data to a central system for collecting and storing readings via Ethernet, 3G/4G, Wi-Fi
1.10	Measuring stations must support reading parameters at least every 60 seconds and sending data to the central storage system at least every 15 minutes (variable from 1 min to 1 h).
1.11	The measuring stations management system must provide access to the read data via a web service or programming interface (API).
1.12	The measuring stations management system must support verification and automatic verification of read data in order to remove irregular or incorrect readings.
1.13	Measuring station for air quality monitoring with a set of sensors for measuring concentrations of CO, NO, NO 2 , SO 2 , O 3
1.14	Electrochemical sensors for measuring carbon monoxide (CO) concentrations in the air in the range from 0 to 10,000 ppb with a lower detection limit of at least 100 ppb and a minimum resolution of 1 ppb
1.15	Electrochemical sensors for measuring concentrations of nitrogen monoxide (N0) in the air in the range from 0 to 5,000 ppb with a lower detection limit of at least 10 ppb and a minimum resolution of 1 ppb
1.16	Electrochemical sensors for measuring concentrations of nitrogen oxide (NO 2) in the air in the range from 0 to 5,000 ppb with a lower detection limit of at least 10 ppb and a minimum resolution of 1 ppb
1.17	Electrochemical sensors for measuring concentrations of sulfur dioxide (S0 2) in air in the range from 0 to 5,000 ppb with a lower detection limit of at least 10 ppb and a minimum resolution of 1 ppb
1.18	Electrochemical sensors for measuring concentrations of ground ozone (0 3) in the air in the range from 0 to 5,000 ppb with a lower detection limit of at least 10 ppb and a minimum resolution of 1 ppb
1.19	Measuring station for air quality monitoring with a set of sensors for measuring concentrations of CO, NO, NO 2 , SO 2 , O 3

1.20	Electrochemical sensors for measuring carbon monoxide (CO) concentrations in the air in the range from 0 to 10,000 ppb with a lower detection limit of at least 100 ppb and a minimum resolution of 1 ppb
1.21	Measuring station for air quality monitoring with a set of sensors for measuring concentrations of PM1, PM2.5, PM10 in the air
1.22	Optical sensors for measuring concentrations of floating particles PM1 in the air in the range from 0 to 500 µg/m3 with a resolution of 0.1 µg /m3
1.23	Optical sensors for measuring concentrations of floating particles PM2.5 particles in the air in the range from 0 to 2,000 µg/m3 with a resolution of 0.1 µg /m3
1.24	Optical sensors for measuring concentrations of floating particles PM10 in the air in the range from 0 to 5,000 µg/m3 with a resolution of 0.1 µg /m3
1.25	Measuring station for measuring meteorological parameters (temperature, relative humidity and air pressure)
1.26	Sensor for measuring air temperature in the range from -25 to 85 °C with a resolution of 0.1 °C
1.27	Sensor for measuring relative air humidity in the range from 0 to 100 % with a resolution of 1% RH
1.28	Sensor for measuring air pressure in the range from 50 to 115 kPa with a resolution of 0.5 kPa
1.29	Module for measuring the noise level in the range 30 – 130dB(A), accuracy ±3 dBA and resolution of 0.1 dBA

Guaranteed standards of the EPC service

2.1. Energy requirements

In order to achieve the desired results of the reconstruction and/or modernisation of the Public Lighting System, the **Guaranteed nominal active power of the Public Lighting System must not be greater than the Maximum allowed nominal active power of the Public Lighting System defined in Annex 8. of the Energy Performance Contract (*Reference data* sheet, cell D12).**

The Provider is obligated to achieve the active power of the Public Lighting System in the nominal dimming regime that is equal or lower than the Guaranteed nominal active power of the Public Lighting System, while the nominal dimming regime shall be the one where the luminaire meets the lighting quality requirements referred to in this document. The Guaranteed nominal active power of the Public Lighting System is the sum of nominal active powers of all luminaires within the scope of implementation of the Measures.

The Provider is obligated to guarantee that the Guaranteed installed active power of the luminaire, for the entire duration of the Contract, equals the product of the Guaranteed nominal active power of the luminaire (power of the luminaire in the dimming regime where the luminaire meets the set lighting quality requirements) and the percentage of the luminaire dimming regime in the scope of 10% to 100% of the nominal active power of the luminaire. Guaranteed installed active power of the Public Lighting System is the sum of the Guaranteed installed active powers of all luminaires within the scope of implementation of the Measures for improving energy efficiency of the Public Lighting System.

The Provider is obliged to achieve the active power of the Public Lighting System which is equal to or lower than the Guaranteed installed active power of the Public Lighting System in all Dimming regimes. Otherwise, the Contracting Entity shall not approve the Adoption of the Public Lighting System.

After the Adoption of the Public Lighting System, i.e. in the Use Phase, in the case of deviation of the active power of the Public Lighting System from the Guaranteed installed active power of the Public Lighting System, a fee adjustment shall be carried out according to the calculations defined in the Contract and the Monitoring, Measurement and Verification Plan (Annex 4 to the Energy Performance Contract).

Fee adjustment in relation to the Guaranteed installed active power of the Public Lighting System is conducted only for the functional luminaires. While calculating the Guaranteed installed active power of the Public Lighting System for all non-functional luminaires, it is necessary to assume that the measured active power equals the Guaranteed installed active power of that luminaire.

INSTRUCTIONS FOR CALCULATING THE GUARANTEED POWER OF THE LUMINAIRES AND THE PUBLIC LIGHTING SYSTEM:

a) Guaranteed nominal active power of the luminaires

Calculated only if the Nominal active power of the Public Lighting System from the Design documentation is lower than the Guaranteed nominal active power of the Public Lighting System from the Tender. If this is the case than Guaranteed nominal active power of luminaire is increased in relation to standard (real) active power of luminaire considering the savings achieved within Designed documentation:

$$P_{Gn-Lum} = P_{n-Lum} * \frac{P_{Gn-System}}{P_{n-System}}$$

It is not allowed for the Nominal active power of the Public Lighting System from the Design documentation to be higher than the Guaranteed nominal active power of the Public Lighting System from the Tender, i.e. in the above mentioned case, the Contracting Entity shall not issue its Compliance with the design documentation (ZP-05).

b) Guaranteed installed active power of the luminaires

$$P_{Gi-Lum} = X * P_{Gn-Lum}$$

c) Guaranteed installed active power of the Public Lighting System

$$P_{Gi-System} = \sum_{j=1}^{m} P_{Gi-Lum-j} = \sum_{j=1}^{m} X_j * P_{Gn-Lum-j} = \frac{P_{Gn-System}}{P_{n-System}} \sum_{j=1}^{m} Xj * P_{n-Lum-j}$$

Whereas:
$P_{Gn\text{-}Lum}$ – Guaranteed nominal active power of the luminaires;
$P_{n\text{-}Lum}$ –Active power of the luminaire as in Design documentation;
$P_{Gn\text{-}System}$ – Guaranteed nominal active power of the Public Lighting System as in the Tender;
$P_{n\text{-}System}$ – Nominal active power of the Public Lighting System as in Design documentation;
$P_{Gi\text{-}Lum}$ – Guaranteed installed active power of the luminaire;
$P_{Gi\text{-}System}$ – Guaranteed installed active power of the Public lighting system;
X – luminaire dimming regime (%);
m – Number of luminaires in the scope of implementation of the Measures for improving energy efficiency of the Public Lighting System

Graphic representation of luminaire power and power of the Public Lighting System with a link to the terms used in this document is provided in the following Image (Image 2.1). The image presents a triangle that represents the Guaranteed installed active power of the Public Lighting System, where the shorter leg represents the active power of the Public Lighting System and the longer leg the Public Lighting System Dimming regime. The relation between the shorter and the longer leg is not proportional to real quantities.

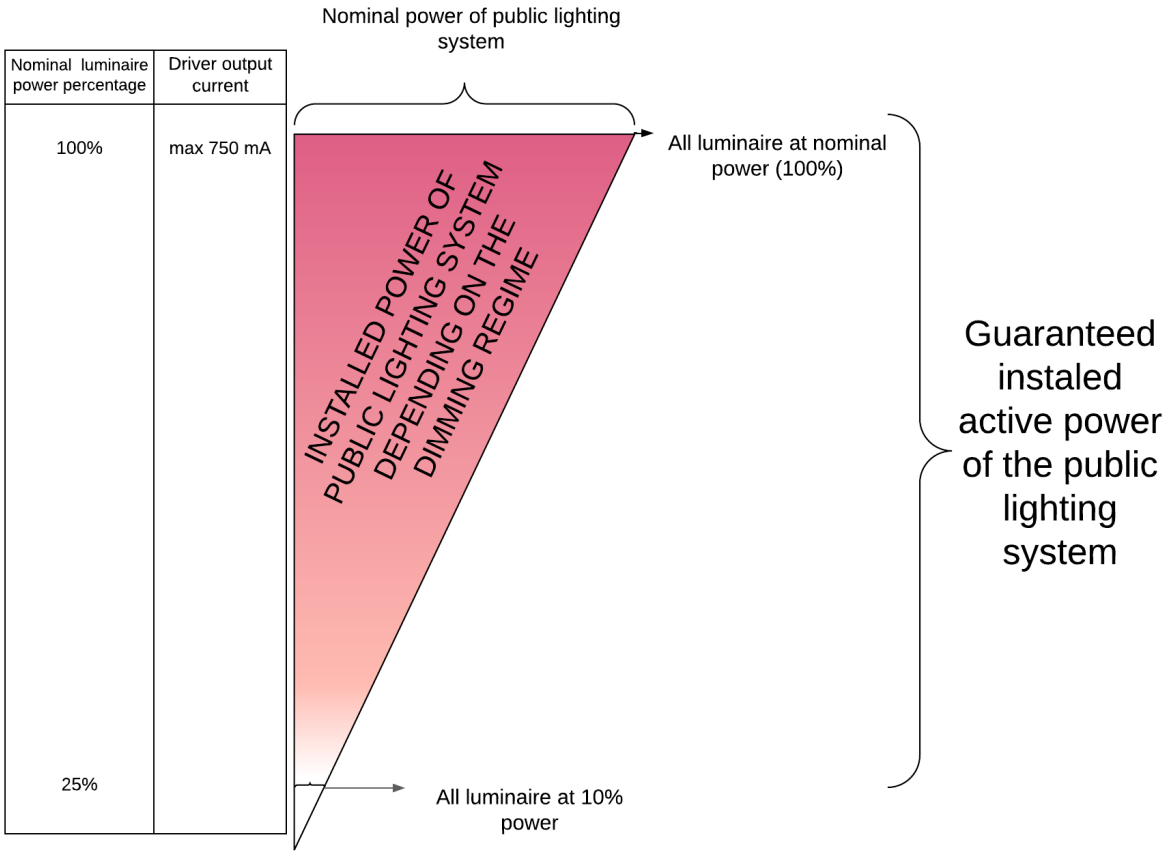

Image 2.2 Graphic representation of the active power of the luminaire and the Public Lighting System

Theoretical example of the calculation for Guaranteed installed active power of the Public Lighting System:
In the Public Lighting System there is a total of 10 luminaires and all luminaires with the power of 100W meet the required lighting quality conditions, i.e. the Nominal power of the luminaires is 100W. Guaranteed nominal power of the Public Lighting System is 1000W (100W x 10pcs). If the Contracting Entity regulates all luminaires at 10% nominal power, the Guaranteed installed power of the Public Lighting System is 100W (100W x 10pcs x 10%). If the Contracting Entity regulates 2 luminaires at 50%, 5 luminaires at 20% and other luminaires operate in the nominal operating mode, the Guaranteed installed power of the Public Lighting System is 500W (100W x 2pcs x 50% + 100W x 5pcs x 20% + 100W x 3pcs x 100%)

2.2. Lighting quality requirements

The proposed technical solution must satisfy all lighting quality requirements prescribed by the pertinent regulations, and ..... EN 13 201-2: 2016 or equivalent with the exceptions defined in chapter 5.4.

2.3. Requirements in relation to the functionality of parts, elements and equipment

Upon implementing the Measures for improving energy efficiency of the Public Lighting System, the Provider must ensure that all parts, elements and equipment installed within the implementation of the Measures are fully functional and proper for the duration of the Contract. Should any element, part or equipment (e.g. a luminaire or MCC) installed under the Measures for improving energy efficiency of the Public Lighting System be malfunctioning, defective or non-compliant with the

Technical Requirements for a longer period than permitted, the Contracting Entity shall reduce the service fee in accordance with the Contract. The functionality of equipment and elements refers to determining whether all parts of the Measures for improving energy efficiency fulfil their task. The functionality of the equipment and elements with regard to functional units is divided into two basic parts: luminaires and MCC (detailed description of the functionality and working order of the parts, elements and equipment is provided in chapter 11.1.1 of this document). **The maximum allowed deadline for rectifying malfunctions of a non-functional or defective part, element or equipment is defined by the Contracting Entity in the table below (**Table 9**).**

Table 9 Maximum permitted deadline for rectifying a non-functional part malfunction

Management and Control Centre		
Permitted defect removal deadline		24 hours
Luminaires		
Lighting classes	**Number of days**	**Number of days in case a greater number of luminaires is not functioning***
M1 / C0	5 days	1 day
M2 / C1	5 days	1 day
M3 / C2	5 days	1 day
M4 / C3	10 days	1 day
M5 / C4	10 days	1 day
M6	10 days	1 day
P1	5 days	1 day
P2	10 days	1 day
P3	10 days	1 day
P4	10 days	1 day
P5	10 days	1 day
P6	10 days	1 day
P7	10 days	1 day

* If six or more luminaires connected to the same metering point are not functioning

If luminaire illuminates areas with two different lighting classes, competent lighting class according to the table above is the class with higher lighting quality requirements.

Guaranteed standards of the SMART EPC additional energy and non-energy services

Integrated lamppost EV charging services requirements

In order to achieve minimal viable quality of provided EV charging services Provider is obligated to maintain and manage every integrated lamppost EV charger installed under SMART EPC Contract. Integrated lamppost EV charging service must be operational during the whole period of EPC Contract and maintained in accordance with minimum standards specified in Annex (…). Provider will be responsible and obligated to provide integrated lamppost EV charging service in accordance with all applicable regulations and legislation and will be solely responsible to third parties for any damages or claims in regard to provision of integrated lamppost EV charging service provided under this Contract.

Minimum quality standards specified under this EPC contract define minimum service standards at the time of signing of this Contract. Provider shall regularly update its services to be in accordance with industry standards and to provide maximum quality service to its customers regardless of this service specifications.

Minimum levels of service failures shall be:

KPI	***Target***
Fault in charging post that disables charging of vehicles – failure shall be rectified in defined period	*8 hours*
Fault in payment systems that disables start of charging session – failure shall be rectified in defined period	*8 hours*
Fault in completing payment transactions – failure shall be rectified in defined period	*4 hours*
Uptime percentage per calendar month	*98%*
Helpdesk calls answering time	*Average 1 minute, Maximum 3 minutes*
Successful transaction completion	*98%*

Provider shall authorize, start, stop and record customers charging sessions activated via MSP RFID card or tag, NFC credit or debit card, ad hoc payment websites accessed by a QR code displayed on the Charge post, or other payment or identification method as agreed with Contracting Entity from time to time.

Provider shall enable customer to pay for their use of the Charge post using the Mobile Service Provider (MSP). Provider shall establish a roaming interconnection with various MSPss and/or roaming hubs. Possible solutions include but are not limited to a direct Open Charge Point Interface (“OCPI”) interconnection or an interconnection via a roaming hub (such as HUBJECT and/or GIREVE).

Smart City applications requirements

In order to achieve minimal quality of provided environment sensors Provider is obligated to maintain and manage every environment sensor installed under SMART EPC Contract. Environment sensor operations dashboard service must be operational during the whole the whole period of EPC Contract and maintained in accordance with minimum standards specified in Annex (...). Provider will be responsible and obligated to provide Environment sensor operations dashboard service in accordance with all applicable regulations and legislation and will be solely responsible to third parties for any damages or claims in regard to provision of environment sensor operations dashboard service provided under this Contract.

Minimum quality standards specified under this EPC contract define minimum service standards at the time of signing of this Contract. Provider shall regularly update its services to be in accordance with industry standards and to provide maximum quality service to its customers regardless of this service specifications.

Minimum levels of service failures shall be:

KPI	*Target*
Service and technical support as a respond to service intervention	*24 hours*
Replacement of defective and faulty sensors	*72 hours*
Uptime percentage per calendar month	*98%*
Helpdesk calls answering time	*Average 1 minute, Maximum 3 minutes*

Communication technologies requirements

In order to achieve minimal quality of provided communication technology Provider is obligated to maintain and manage every street side antenna under SMART EPC Contract. Communication technology service must be operational during the whole the whole period of EPC Contract and maintained in accordance with minimum standards specified in Annex (…). Provider will be responsible and obligated to provide communication technology service in accordance with all applicable regulations and legislation and will be solely responsible to third parties for any damages or claims in regard to provision of communication technology service provided under this Contract.

Minimum quality standards specified under this EPC contract define minimum service standards at the time of signing of this Contract. Provider shall regularly update its services to be in accordance with industry standards and to provide maximum quality service to its customers regardless of this service specifications.

Minimum levels of service failures shall be:

KPI	*Target*
Service and technical support as a respond to service intervention	*24 hours*
Replacement of defective and faulty street side antenna	*10 days*
Uptime percentage per calendar month	*99%*
Helpdesk calls answering time	*Average 1 minute, Maximum 3 minutes*

Part B of the Output specification –requirements in design phase

In this part of Smart EPC technology output specification technical requirements for the design phase are set. It also defines the criteria for control of the developed design documentation and quality assessment of designed equipment.

Design Phase commences immediately upon Contract signing, and lasts until the design documentation acceptance (after it has been examined).

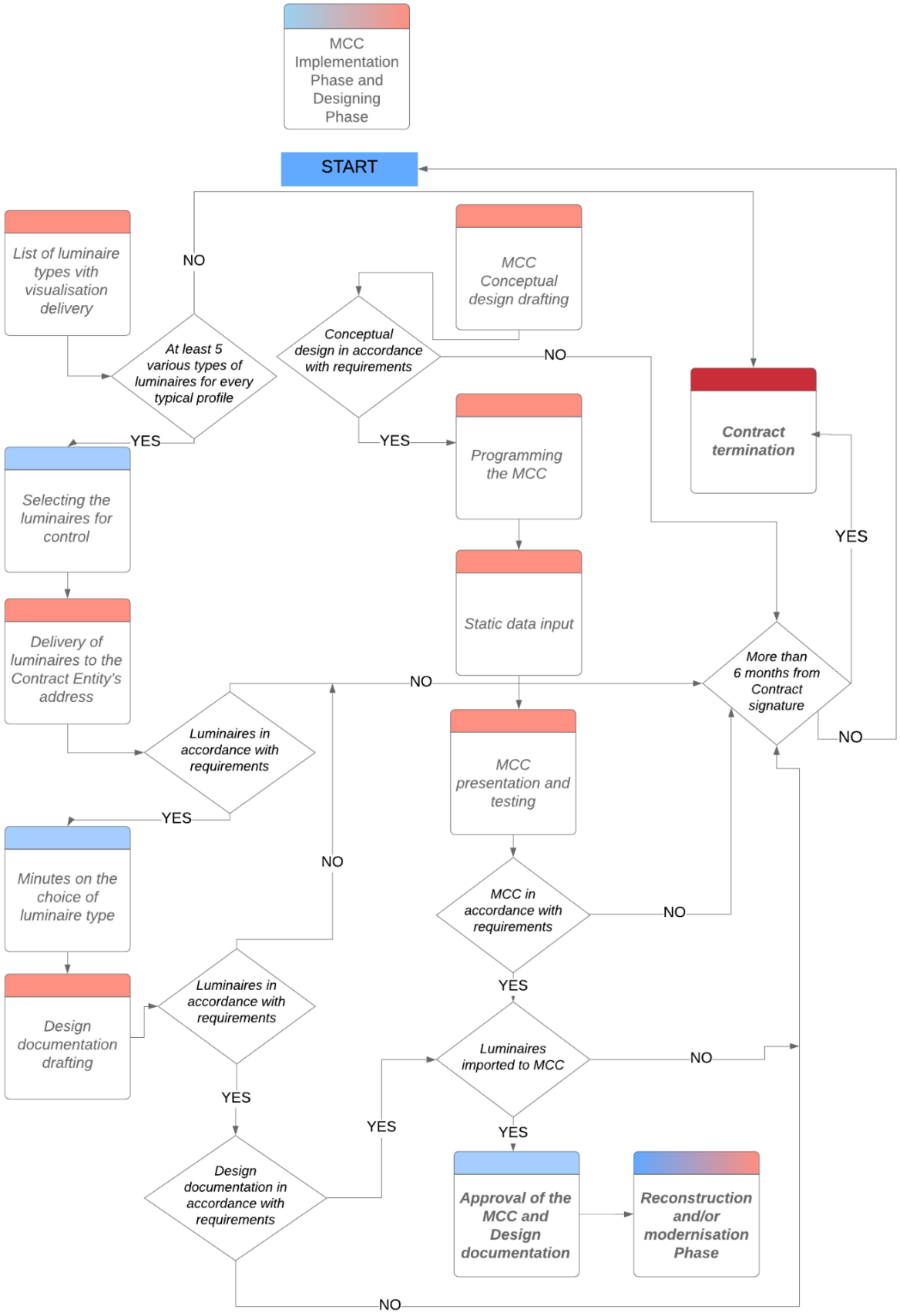

Image 3 Workflow of Management and Control Centre Implementation Phase and Designing Phase

Guidelines for the development of Conceptual design for the Management and Control Centre (MCC)

The drafting of Conceptual design for the MCC implementation is a necessary prerequisite for successful implementation, use and maintenance of the MCC. The Conceptual Design needs to comprise all of the MCC functional units, which includes hardware, software, communication with the luminaires, infrastructure, supporting systems and installations etc., while also designing them in detail. The Conceptual Design must be in accordance with the Contracting Entity's requirements defined in part A of this document and the Provider's tender.

The Conceptual design for the MCC also must contain the original programme code with the stated standards and protocols that are used and all other necessary information for possible subsequent expansions, upgrades or modifications of the MCC by the Contracting Entity or third person not involved in the implementation of the MCC.

The Conceptual Design needs to contain a detailed specification of necessary infrastructural system resources (hardware and software) for installing the MCC (e.g. CPR, RAM, disc, OS, surveillance, backup, base etc.).

The MCC Conceptual design needs to be delivered within the deadline defined by the Energy Performance Contract. In the case that the Conceptual Design is in accordance with the requirements set out in this document, the Contracting Entity shall provide its approval to the Conceptual Design which gives the Provider the authorisation to start programming the MCC. A template of the Approval of the Conceptual Design can be found in the Contents of reports, approval and minutes (Annex 5 to the Energy Performance Contract, ZP - 03).

For the duration of the Contract, the Provider is obligated to perform maintenance of the MCC. During the Contract term, for every change in the original programme code in relation to the Conceptual design for the Management and Control Centre, the Provider is obligated to provide the Contracting Entity with a written detailed description of the changes with the updated programme code.

Guidelines for the development of Lighting design documentation

General requirements

Design documentation needs to be drafted in compliance with all relevant regulations and particularly the Light Pollution Act (Official Gazette no …..), subordinate acts referred to in Articles 9, 10 and 12 of the Light Pollution Act, in accordance with professional standards, Public Lighting Plan, Technical Requirements defined by this document and the Tender (Annex 6 to the Contract). If the design documentation has been drawn up in such a way, and if all necessary permits for the reconstruction and/or modernisation works have been obtained from relevant bodies and institutions, the Contracting Entity will approve the design documentation, and the Provider can start with the reconstruction and/or modernisation of the Public Lighting System, marking the beginning of the reconstruction and/or modernisation phase.

The design solutions within the design documentation need to contribute to achieving the following goals:

a) Traffic safety;
b) Environmental protection (protection of the environment, residential and commercial zones from light pollution, removal of harmful working fluids of the light source (mercury etc.), reduction of greenhouse gasses emissions);
c) Increasing energy efficiency of the existing public lighting system.

The design documentation needs to ensure the implementation of an optimal technical, technological and economically viable solution to achieve the desired results:

- Electrical energy savings;
- Reduction of the level of CO_2 emissions;
- Compliance of the lighting quality parameters defined in …… EN 13201-2:2016 or an equivalent standard;
- Compliance with:
  - *The Commission Regulation (EU) 2019/2020 from 1 October 2019 on determining the requests for eco-design of lighting sources and independent luminaire control gear in accordance with the Directive 2009/125/EC of the European Parliament and the Council and repealing Regulation No. 244/2009 of the Commission (EC), (EC) No. 245/2009 and (EU) No. 1194/2012;*
  - *Commission delegated Regulation (EU) 2019/2015 of 11 March 2019 amending Regulation (EU) 2017/1369 of the European Parliament and Council regarding the energy efficiency labelling of lighting source and repealing the Delegated Regulation of the Commission (EU) No. 874/2012;*
  - *Directive 2014/53/EU of the European Parliament and the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to radio equipment on the market and repealing the Directive 1999/5/EC*
- Reduction of light pollution in accordance with the Light Pollution Act (Official Gazette no …….);
- Eliminating the use of hazardous substances and consequently the costs of disposal;
- Reduction of the public lighting system maintenance costs.

Defining typical profiles of illuminated areas

The Provider is obligated to determine typical profiles of all illuminated areas in the scope of implementation of the Measures within the Design documentation. One typical profile comprises illuminated areas with similar geometric traits (surface width, pole/luminaire height, distance between poles etc.), **whereas the similar geometric trait is defined as the one where the average**

luminance (in road areas) or the average illuminance (in pedestrian areas) does not deviate by more than 10% from the average luminance (in road areas) or average illuminance (in pedestrian areas) of typical profile in the event of one or more parameters changing.

If modification of one or more geometric parameters in the typical profile results in a change of the average surface illuminance by more than 10% from average illuminance of the typical profile, a new typical profile needs to be defined by the Provider.

The Contracting Entity has made its data available to the Provider in the form of a database in a table view with a set of properties and the geolocation of each illuminated area in accordance with the Project Scope (Annex 1 to the Contract). The above mentioned database was created based on an energy audit of the public lighting system by a legally authorised official for conducting energy audits and the Contracting Entity does not take over the risk related to the possible deviation of the data contained in the database from the actual state on site. While determining the typical profiles, the Provider shall establish them in accordance with the actual state on site at the time of creating the Design documentation.

The Contracting Entity will verify the selection of the typical profile. The Contracting Entity will not approve the design documentation (ZP – 05) should it consider that any of the typical illuminated area profiles has not been defined or if any of them has been described incorrectly.

The Provider is obligated to determine the typical profiles for all illuminated areas within the scope of implementation of the Measures in the design documentation, certifying this with the following statement:

The defined typical profiles comprise all illuminated areas in the scope of implementation of the Measures for improving energy efficiency, while the average luminance (in case of road areas) or average illuminance (in pedestrian areas) in all areas within the scope of implementation of the Measures is within 10% average luminance (in road areas) or average illuminance (in pedestrian areas) of one of the defined typical profiles.

By granting its approval of the design documentation (ZP – 05), the Contracting Entity does not take over the risk of meeting the lighting quality requirements in the future or any other technical requirements referred to in this document in on-site situations. The Provider's responsibility is to optimise and align the defined typical profiles with the on-site situation, while respecting the requirements referred to in this document.

Minimum requirements for the designed equipment and materials

In part A of this document, the Contracting Entity defined the minimum technical requirements for the subject of procurement. The design documentation shall only contain the technical solution that meets the requirements referred to in this document and the Tender.

In the Tender, the Provider has obliged to offer a certain number of different luminaire types. Every luminaire type needs to be able to meet the minimum technical requirements of the Contracting Entity referred to in this document and the Guaranteed nominal active power of the Public Lighting System.

The luminaires planned to be installed must have the light sources of adequate power and luminous flux distribution, depending on the intended installation location.

When permitted by the arrangement and feeder lines, the luminaires should be connected to the power supply in such a way that the load is distributed optimally across the power cable phases, ensuring symmetrical or approximately symmetrical load conditions across the phases. Furthermore, they should be connected to a feeder line of the air network via separate insulated terminals with a plug for public lighting without the possibility of replacing the contacts or a similar connection, to facilitate the connecting and disconnecting of the luminaires.

The Provider shall install an appropriate bracket/arm for each modernised luminaire. When reconstructing and/or modernising luminaires, the Provider shall check and, if necessary, adjust the overload, over voltage and short circuit protection system in the post distribution, if there is any. Spare parts for selected luminaires must be available for a period of at least 10 years from the date of acceptance of the Measures for improving energy efficiency of the Public Lighting System.

In the phase of drafting the Design documentation, the Provider is not allowed to change the luminaire type in relation to the luminaire type that the Contracting Entity selected in the Minutes on the choice of luminaire type. Changes of the luminaire type installation locations in relation to the originally defined locations by the Contracting Entity are only allowed upon obtaining written approval of the Contracting Entity and the Provider (ZP – 02):

Lighting quality requirements

The proposed lighting quality solution must satisfy all parameters prescribed by the relevant legislation (particularly the Light Pollution Act (Official Gazette no …..) with related regulations), ……. EN 13 201-2: 2016 or equivalent and the Lighting Plan. While drafting the lighting quality calculations for the new designed state, it is necessary to verify all typical cases, zones of conflict etc. while respecting the lighting quality values defined by the relevant legislation, ……. EN 13 201-2:2016 standard or equivalent, on the entire public lighting route.

The Provider has the possibility to optimise the proposed technical solution in terms of proposed savings given the possible combinations of luminaire power, optics, head height or bracket length, with the aim of meeting the conditions set out in this document, while complying with the requirements for brackets/arms listed in part A of this document.

The luminaires need to be equipped with light sources and drivers of adequate power, as well as with optical devices with adequate light distribution in order to meet the lighting quality requirements, depending on the planned installation site.

The Provider is allowed to create one lighting quality calculation for several illuminated areas of the same lighting class with similar geometrical traits, i.e. the same typical profile, if the listed parts are illuminated by the same technical solution. The lighting quality calculations must be drafted in writing for each luminaire type (power and/or applied optics), lighting class and its typical profile.

Pursuant to the *Regulation on contracting and implementation of energy services in the public sector* (Official Gazette no ……), the Provider shall guarantee savings at least equal to or greater than the fee the Contracting Entity undertakes to pay to the Provider. Accordingly, there are no grounds for upgrading the public lighting system by adding new luminaires in order to comply with the lighting quality standards (……. EN 13 201-2: 2016 or equivalent, in the case of road lighting, or ……. EN 12 464 or equivalent, in the case of other external lighting). Due to the above mentioned reason, when drafting the design documentation and later during the Use Phase, certain parts of the Public Lighting System will not be able to meet the lighting quality parameters defined by the ……. EN 13 201-2:2016 standard

or equivalent. These parts of the Public Lighting System shall be determined exclusively according to the following criteria:

1. If the distance between the existing neighbouring luminaires is greater than the product of the 4.7 factor and the maximum possible height of luminaire installation;
2. If the distance between the luminaire's photometric centre and the opposite end of the illuminated area is greater than the product of the 1.3 factor and the maximum possible height of luminaire installation.

The maximum possible height of luminaire installation depends on the height of the pole and the possibility of positioning the bracket/arm/overweight.
The listed parts refer to the locations with unsatisfactory infrastructure.

In parts with unsatisfactory infrastructure where it will not be possible to satisfy the lighting quality parameters defined by the …... EN 13 201-2:2016 standard or equivalent, it is necessary to choose, design and implement a technical solution that will satisfy the marginal cases referred to in the points above (e.g. on 8 meter high poles, considering the supply network, the maximum possible height of the luminaire installation is 7.5 meters and the distance between the poles is 40 meters. In the case described, it is necessary to select a luminaire that, at the distance of 35.25 meters (4.7x7.5), satisfies the conditions of the …... EN 13 201-2:2016 standard or equivalent).

If a surface area is classified as P7, the installation of luminaires with the output luminous flux of less than 2,000 lm is not allowed.

In the case of upgrade of the surface areas not classified under …... EN 13 201 or equivalent (playgrounds, façades, etc.), the selection of a new technical solution must be based on maintaining the suitable output luminous flux, while choosing the appropriate optics. If not prescribed differently by the Contracting Entity, the satisfactory luminous flux and the appropriate optics is the one that meets the requirements of the respected standard (outdoor work areas according to …... EN 12464-2 or equivalent), i.e. that keeps the illuminance of the area as it was with the existing luminaire that is being modernised.

The lighting quality calculations must be made and attached in writing for each luminaire, and for the required lighting class and geometry, i.e. the applied optics. In locations with unsatisfactory infrastructure, in addition to the parameters set out by the above-referenced standard, it is also necessary to calculate horizontal illuminance and attach a table with both horizontal illuminance and luminance values at points as well as the parameters set out by …... EN 13 201-2:2016 standard or equivalent.

Intersections

With regard to the lighting quality requirements, intersections can be grouped into conflict areas. The Contracting Entity has specified the lighting classes for intersections. If no lighting class is specified, it shall be determined on the basis of the lighting class of the more important road in an intersection (e.g. the main road in an M1 intersection, intersections classified as C0, M2/C1, M3/C2, etc.).

Luminaire dimming regime

For every typical profile, it is necessary to conduct additional lighting quality calculations and, in accordance with the calculation, state the data on the dimming percentage of the luminaire power that is necessary to meet the requirements of the …... EN 13 201-2:2016 standard or equivalent **for one class up** (unless it is the M1, C1, P1 class), **for one class down** (unless it is the M6, P6, C6 class) and **for two classes down** (unless it is the M5, P5, C5 class).

Photometric files

It is necessary to deliver photometric files used in the lighting quality calculations in *.ldt format. A test report issued in accordance with …... EN 13032-1, …... EN 13032-4 and CIE 025/E:2015 standards by a laboratory accredited in accordance with …... EN ISO/IEC 17 025 must be submitted for the photometric files used in lighting quality calculations, the provision on equivalence applies to all the above mentioned standards and file types. It is necessary to deliver a confirmation of appropriate laboratory accreditation issued by the national accreditation body in accordance with the Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/93.

The use of photometric files modified in comparison to those created in an accredited laboratory in accordance with …... EN ISO/IEC 17 025, or equivalent, is not allowed.

As an exception, if the used photometric files have been modified with regard to test reports on measuring the luminance intensity distribution in accordance with …... EN 13 032-1, …... EN 13032-4, IES LM 79-08 and CIE 121-1996 standards (the provision on equivalence applies to all the above mentioned standards), the following additional documentation must be submitted:

- Test reports on measuring the output luminous flux of a luminaire from the same type of luminaires and with the same optics (the same light distribution properties) by application of the relative measurement method showing the ratio of the output luminous flux of the luminaire to the output luminous flux of the light source used, i.e. the light losses of the luminaire. The light distribution properties of a luminaire whose photometric file has been modified must be identical to the light distribution properties of the luminaire for which a test report on measuring the luminance intensity distribution in accordance with …... EN 13 201-2:2016, …... EN 13 032-1, EN 13032-4, IES LM 79-08 and CIE 121-1996 standard has been submitted (the provision on equivalence applies to all the above mentioned standards).
- A test report on measuring the output luminous flux of a printed circuit board with LED light sources (PCB) used in a luminaire with modified photometric files.

The output luminous flux of the luminaire used in the calculations must include any optical losses (protective glass/lens).

The photometric file needs to be named in a way that the connection with the luminaire type in question is clear.

Calculation guidelines

Given than there is no exact data on the pavement/road surface category (R factor), R2 or R3 factor, q0 = 0.07 needs to be used for the said road surfaces with lighting class from M1 to M6 for the road covering type.

It is necessary to attach to the design documentation an electronic record of the used IES or LDT files for the luminaires used in calculations, as well as electronic versions of lighting calculations exported from Relux (version 2020.2.3.0 or newer) or Dialux evo (version 9.1.51242 or newer). The electronic records shall be delivered on a USB stick.

Energy requirements

Nominal active power of the Public Lighting System within the Design documentation must be lower than or equal to the Guaranteed nominal active power of Public Lighting System specified in the Tender (Annex 8 to the Contract, Tenderer's input data, cell D7). Nominal active power of the Public Lighting System equals the sum of nominal active powers of all luminaires, i.e. the sum of active

electric powers of the luminaire including the energy losses in the luminaire (source of light; luminaire control gear) in the dimming regime in which the luminaire meets the set lighting quality requirements. In the design documentation, it is necessary to indicate the Nominal power of all luminaires in the scope of implementation of the Measures for improving energy efficiency, which the Provider is obligated to enter into the MCC.

In the Design documentation, the Provider is obligated to define the nominal active power of every luminaire type and configuration in the scope of implementation of the Measures for improving energy efficiency of the Public Lighting System, while **the sum of the nominal powers of all luminaires must be lower than or equal to the Guaranteed nominal active power of the Public Lighting System.** If the sum of the nominal active powers of the luminaires within the Design documentation is smaller than the Guaranteed nominal active power of the Public Lighting System, the MCC shall correct the Nominal active power of the luminaires in order for the sum to be equal to the Guaranteed nominal active power of the Public Lighting System.

Minimum contents of the Design documentation

Contents defined by the Act

The reconstruction and/or modernisation design documentation needs to be developed in accordance with the relevant legislation, in particular the Building Act (Official Gazette no …….), the Light Pollution Act (Official Gazette no …….), the Construction Products Act (Official Gazette no ……), the Act on the Chamber of Architects and Chambers of Engineers in Construction and Physical Planning (Official Gazette no ……), the Act on Efficient Energy Use in Direct Consumption (Official Gazette no ……), the Act on Physical Planning and Building Tasks and Activities (Official Gazette no …….), the Energy Efficiency Act (Official Gazette no …….) and other applicable laws and all by-laws, ordinances, technical regulations and standards, and the rules of profession valid at the moment of signing this Contract. Since energy service is the subject-matter of the Contract, the content of the design documentation needs to comply with the *Regulation on contracting and implementation of energy services in the public sector (Official Gazette no ……..)*. All provisions of the *Grid Code of the Distribution System* (Official Gazette no ……) need to be complied with, particularly with regard to a retroactive effect of the public lighting system on the grid.

The design documentation needs to precisely define the needed interventions into the public lighting system. The map scale for the design solution needs to be sufficient for unambiguously defining the luminaire positions, with a legend that will provide an unequivocal interpretation of symbols. The design documentation usually serves as construction design documentation as well, necessitating all detailed designs needed for the execution of works within the Measures for improving energy efficiency of the Public Lighting System (detailed maps etc.), all in line with the *Ordinance on the mandatory contents and format of construction work designs* (Official Gazette no …….).

The documentation needs to be created in the form of the Main design of modernisation of public lighting, in accordance with the *Ordinance on simple and other buildings and works* (Official Gazette no ……..) and it is necessary to obtain a statement from the designer stating that, for the execution of works in accordance with the main design and the Ordinance on simple and other buildings and works, the above-mentioned act and permits are not necessary.

All materials, devices, technical solutions and calculations should be prioritised in accordance with the National technical standards (or equivalent) by way of which European standards have been accepted, European technical approvals, common technical specifications, international standards, other reference technical systems established by European standardisation bodies or if any of the

above are not in place, with national standards, national technical approvals or national technical specifications related to the design, calculation and execution of works and the use of goods. The note on equivalence is applicable to all standards referred to in this document. If an equivalent standard is used, its content needs to meet all conditions required by national standards, EN or IEC standards (depending on the standard for which an equivalent standard is proposed). Since reconstruction and/or modernisation are carried out under the Energy Performance Contract, the Design documentation needs to be harmonised with the *Regulation on contracting and implementation of energy services in the public sector* (Official Gazette no ……).

If that is prescribed in accordance with legislation and/or with Contracting Entity's contract with a third party (e.g. HEP), the Provider is obliged to obtain additional approvals for the implementation of the project referring to the design documentation.

Evidence of compliance with the minimum technical requirements

The Provider is obliged to attach to the Design documentation the required evidence of compliance with the technical and lighting quality requirements for each technical design solution. List of evidence proving that the drafted technical solution is in compliance with the Contracting Entity's requirements with the number of the requirement referred to which is contained in the part A of this document is given in the table below (Table 10).

Table 10 List of evidence and technical requirements referred to

Evidence	**Requirement number referred to in PART A of the Technical Requirements – Minimum Technical Requirements**
ENEC certificate	1.3
Internet database accompanied by the list of certified DALI 2.0 products (D4i)	2.3, 3.8, 3.9, 3.10, 3.11, 3.12, 3.13, 3.14, 3.15, 3.16, 3.17, 3.18, 4.7, 4.8, 7.3, 8.1, 8.2, 8.3, 8.4, 8.5, 8.6
Test report in accordance with IEC TR 62778:2014 issued by the laboratory accredited in accordance with EN ISO/IEC 17 025 or equivalent	4.4
Test report in accordance with IES LM 80-08 – Approved Method: Measuring Lumen Maintenance of LED Light Sources *Approved Method: Measuring Lumen Maintenance of LED Light Sources* or IES LM 80-15 – Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules) *Approved Method:* Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules) issued by laboratory accredited in accordance with ..... EN ISO/IEC 17 025 or equivalent	4.6
Test report in accordance with ..... EN 55015:2013, ... EN 61000-3-2:2006 + A1:2009 + A2:2009, ... EN 61000-3-3:2013, ... EN 61547:2009 issued by laboratory accredited in accordance with ..... EN ISO/IEC 17 025 (the provision on equivalence applies to all the above mentioned standards)	1.4

Test report in accordance with ..... EN 13032-1, ... EN 13032-4, CIE 025/E:2015 issued by laboratory accredited in accordance with ..... EN ISO/IEC 17 025 (the provision on equivalence applies to all the above mentioned standards)	1.1, 4.1, 4.2, 4.3, 4.5, 7.1
Test report in accordance with ..... EN 60598-1:2015, ... EN 60598-2-3:2009 issued by laboratory accredited in accordance with ..... EN ISO/IEC 17 025 (the provision on equivalence applies to all the above mentioned standards)	1.2, 2.1, 2.5, 3.1, 3.2, 3.3
Test report in accordance with the ..... EN 61643 standard published by laboratory accredited in accordance with ..... EN ISO/IEC 17 025 (the provision on equivalence applies to all the above mentioned standards)	5.1, 5.2
Test report in accordance with ..... EN 62262:2008 issued by laboratory accredited in accordance with ..... EN ISO/IEC 17 025 (the provision on equivalence applies to all the above mentioned standards)	2.2
Statement / Manufacturer's technical catalogue	Other
Field laboratory for testing the compliance of the technical solution with the ..... EN 13 201-2:2016 standard or equivalent (the Contracting Entity is responsible for the testing area)	Lighting quality requirements

The evidence shall be submitted in National language. If written in another language, it needs to be translated into National language with the delivery of the translation and the original evidence.

The rule of equivalence is valid for all of the above standards, certificates and test reports; i.e. test reports drawn up in accordance with an equivalent standard may be submitted, with the equivalence criterion being the test procedure and instructions, requirements for the testing equipment and persons performing the tests, standardised test conditions and test reports.

For every delivered test report, it is necessary to provide appropriate accreditation of the laboratory that issued the test report. Accreditation must be issued by the national accreditation body in accordance with the Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/93. The accreditation must clearly show the scope of testing for which the laboratory is accredited.

Other requirements of the Contracting Entity

The design documentation shall contain a description of the energy service, a plan of implementation the Measures for improving energy efficiency, technical specifications of the equipment to be installed with a detailed quantity and cost calculation for the proposed Measures for improving energy efficiency of the Public Lighting System. A detailed specification of the equipment and works needs to be drawn up. The cost of the investments agreed upon, which includes all planned works and materials, needs to be estimated. The investment amount referred to above shall be in accordance with the procurement documentation Annex Investment Value (Annex 7 to the Energy Performance Contract).

The equipment must be designed in a way to facilitate inspection and maintenance. It must function correctly in all expected operating conditions, i.e. all expected conditions of use and all expected environmental conditions. When selecting a technical solution, *Directive 2009/125/EC establishing a framework for the setting of eco-design requirements for energy-related products* must be taken into

account in terms of equipment quality and maintenance costs minimisation, which will also affect the additional energy consumption during maintenance. All equipment needs to have adequate protection in order to prevent any possible damage. Protection must comply with the relevant rules of the profession, occupational safety and fire protection.

While choosing the equipment its compliance with the following must be taken into consideration:

- The Commission Regulation (EU) 2019/2020 from 1 October 2019 on determining the requests for eco-design of lighting sources and independent luminaire control gear in accordance with the Directive 2009/125/EC of the European Parliament and the Council and repealing Regulation No. 244/2009 of the Commission (EC), (EC) No. 245/2009 and (EU) No. 1194/2012;
- Commission delegated Regulation (EU) 2019/2015 of 11 March 2019 amending Regulation (EU) 2017/1369 of the European Parliament and Council regarding the energy efficiency labelling of lighting source and repealing the Delegated Regulation of the Commission (EU) No. 874/2012;
- Directive 2014/53/EU of the European Parliament and the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to radio equipment on the market and repealing the Directive 1999/5/EC

All materials used should be of the highest quality and suitable for operation in expected conditions, so as to ensure safe and long-term operation. Particular attention should be paid to avoiding or preventing corrosion due to external factors, as well as ensuring simple disposal upon life cycle expiry. The equipment must be protected by high-quality coatings resistant to environmental influences. The Provider shall, at its own expense, eliminate any sign of corrosion at least for the duration of the contractual relationship (applicable only to the elements of the public lighting system covered by the Measures for improving energy efficiency).

Expected environmental conditions for the installation and correct functioning of the equipment:

- Operating temperature: -20/+35°C;
- Relative humidity: 100%.

When drafting the design documentation, the Provider must take into account that it is the Provider’s responsibility to protect all equipment installed under the Measures for improving energy efficiency of the Public Lighting System from surges, i.e. from lightning and other transient surges that may occur in the part of the electricity system within the scope of implementation of the Measures for improving energy efficiency and thus increase the risk of damage and/or termination of operation of the installed equipment. The Provider will assume the risk of failure of the installed equipment due to a lightning strike (which does not represent a case of force majeure), and it may upgrade the surge protection in luminaires or in other parts of the Public Lighting System (by installing cathodic protection in the form of surge arresters etc.). The Provider will be responsible for obtaining approval of a third party (a distribution system operator or similar) should the planned works require so, with no interference from the Contracting Entity.

In addition to the design documentation, it is necessary to enclose an electronic data storage medium. Photometric files and files containing the lighting quality calculations o must be stored in the data storage medium to enable the Contracting Entity to check calculations from design documentation. The files must be sorted and labelled in a transparent manner by the cost estimate item designation, so that they can be easily used to check each luminaire from the Design documentation. The Contracting Entity will use the photometric files attached herewith to check if the luminaire complies with the relevant requirements. Such files must be publicly available on the manufacturer's website.

Relevant supporting documentation must be enclosed with the design documentation, proving that all technical specifications set out herein have been met. It must be organised in such a way that it can be easily linked to the type of the technical design solution. For each type of luminaire, on the supporting documentation data sheets, it is necessary to include a designation from the cost estimate that will be equal to the photometric file designation (stored on digital media) to facilitate the search during the control performed by the Contracting Entity.

In addition to the legally prescribed elements, the Design documentation must contain the following:

- Energy balance sheet within the prescribed scope of the new lighting solution:
  - Electricity consumption of the existing public lighting system;
  - Estimated electricity consumption upon implementation of the Measures for improving energy efficiency;
  - Decrease in the annual consumption in kWh/y compared to the original state of the overhauled public lighting with the application of active adjustment regime;
  - Reduction of the annual emission of polluting gases in tonnes of CO_2/year compared to the original state of the overhauled public lighting[5];
  - Public lighting system operating power in kW (rounded to two decimal places), given in a summary manner for each metering point – the value represents the Guaranteed active power;
  - Decrease in the installed operating power in kW compared to the Reference state of the overhauled public lighting;
- Thorough estimate of the planned overhaul investment with listed costs;
- Any necessary approvals required for the Project;
- Lighting quality calculations with luminaire information (total installed luminaire active power (all losses included), luminous flux of the LED module (lm), luminous flux of the luminaire (lm), luminous efficacy (lm/W), corelated colour temperature (CCT), colour return factor (CRI), ULOR of the entire luminaire) for each typical profile. The lighting quality calculations must be made and attached in writing for each luminaire, and for the required lighting class and geometry, i.e. the applied optics. In addition to the parameters set out by the standard, it is also necessary to calculate horizontal illuminance and attach a table with both horizontal illuminance and luminance values at points as well as the parameters set out by the ..... EN 13 201-2:2016 standard or equivalent.
- Any legally prescribed elements, including an Safety at work elaborate and a list of applicable laws, ordinances, technical provisions and standards, an overview of fire safety measures, a quality control and assurance programme, and general and specific execution conditions for the execution of works and the placing of electrical installations or any other parts required in line with the rules of the profession;
- Active power of all luminaire types,;
- Data on the formula for increasing the power of the luminaire for the purpose of meeting the criteria for Constant Lumen Output of the luminaire (CLO);
- List of sections where it is not possible to ensure compliance with the ..... EN 13 201-2:2016 standard or equivalent through replacement of the luminaires one for one.

Additional specific requirements related to the source of financing

If the reconstruction and/or modernisation project is eligible for funding through available sources of financing or co-financing, the Provider shall grant to the Contracting Entity and/or a third person (e.g. to another design studio) the right to use, correct and amend the design documentation drafted by the Provider.

[5] Specific emission factor CO2 (conversion factor) for electricity: 0.23481 kg CO2/kWh

Import of luminaires into the MCC

Before obtaining approval of Design documentation (ZP - 05), the Provider is obligated to enter the designed solution, i.e. all planned luminaires with all the necessary static data and especially the Nominal active power of the luminaire. This way the Contracting Entity has insight into the work execution dynamics and the later monitoring of whether the Guaranteed standards of service are being met.

If the Nominal active power of the Public Lighting System within the Design documentation is lower than the Guaranteed nominal active power of the Public Lighting System (i.e. the power defined within the Tender), i.e. if the Provider has achieved Design documentation savings which are higher than the Guaranteed savings, the Provider shall, in accordance with the Contract, be entitled to a Fee increase.

Considering that the fee is adjusted via the MCC, the Provider shall enter the following data into the MCC:

- Nominal active power of the Public Lighting System referred to in the Design documentation;
- Nominal active power for each luminaire in the Public Lighting System referred to in the Design documentation;
- Guaranteed active power of the Public Lighting System referred to in the Tender,

and, on the basis of the entered parameters, the MCC shall automatically calculate the **Guaranteed installed active power of the luminaires** in a way that the Nominal active power of each luminaire shall proportionally increase in accordance with the difference between the Guaranteed nominal power of the Public Lighting System referred to in the Tender and the Nominal active power of the Public Lighting System referred to in the Design documentation, according to the formula for calculating the guaranteed nominal active power of the luminaires referred to in chapter 2.1.

An example of the automated calculation of the Guaranteed nominal active power of the luminaire and the Guaranteed installed active power of the luminaire

E.g. ten thousand luminaires are the subject of the modernisation. The Provider has stated in the Tender that the Guaranteed nominal active power of the Public Lighting System is 1,000 kW, provided that the standards requested by this Contract are met with luminaires whose nominal power equals 100 W.

By detailed calculations during the drafting of the Design documentation, the Provider determined that all Guaranteed standards would be able to be met with luminaires whose Nominal active power equals 80 W, i.e. with the overall Nominal active power of the Public Lighting System being 800 kW, which is 200 kW less than the Guaranteed nominal active power of the Public Lighting System.
The Provider has entered 80 W luminaires into the MCC, as well as the 800 kW Nominal active power of the Public Lighting System and the 1,000 kW Guaranteed nominal active power of the Public Lighting System. In order to compare the measured active powers of luminaires with the correct value, the MCC will perform an automated calculation of the Guaranteed nominal active power of the luminaire and the Guaranteed installed active power of the luminaire based on the entered parameters in the following manner:

$$P_{z-Lum} = 80\ W * \frac{1.000\ kW}{800\ kW} = 100\ W$$

In accordance with the above mentioned, the MCC shall enter the value of 100 W for the Guaranteed nominal power of each luminaire.

The Contracting Entity has subsequently decided that, in particular time periods, the dimming regime shall be applied. In accordance with the dimming regime, the MCC shall perform an automated calculation of the value of the Guaranteed installed active power of the luminaires as the product of the Guaranteed nominal active power of the luminaires and the dimming regime percentage (Table 11).

Table 11 Example of calculation for Guaranteed Installed Active Power

Nominal active power of the luminaires (referred to in the Design documentation)	Guaranteed nominal active power of the luminaires (automated MCC calculation)		From (hours)	To (hours)	Dimming regime	Guaranteed installed active power of the luminaires (automated MCC calculation)
80 W	100 W	Period A	19:00	23:00	100%	100 W
		Period B	23:00	02:00	50%	50 W
		Period C	02:00	07:00	75%	75 W

Fee adjustment shall be done by comparing the measured values with the Guaranteed installed active power of the luminaires. Measuring shall be done in a particular time interval; for the purpose of this example, we shall assume that the measuring takes place every 5 hours, i.e. 3 times during the night and that the calculation period is one night (Table 12).

Table 12 Example of calculation of the fee adjustment due to the difference in the Guaranteed installed active power and the measured active power of the luminaire

	Guaranteed installed active power of the luminaires (automated MCC calculation)	Measured active power of the luminaires	Difference in power	Fee adjustment
Period A	100 W	110 W	+10 W	0.01 kW x 1 HRK/kWh x 5 hours = **HRK 0.05**
Period B	50 W	45 W	-5 W	-0.005 kW x 1 HRK/kWh x 5 hours = **HRK -0.025**
Period C	75 W	75 W	0 W	0 kW x 1 HRK/kWh x 5 hours
OVERALL adjustment				**HRK 0.025**

*unit price of electrical energy is assumed to be 1 HRK/kWh

Change of luminaire installation location

The Contracting Entity retains the right to change the luminaire installation location in relation to the location defined in the Project Scope (Annex 1 to the Contract). If the Contracting Entity has delivered the Request to change the luminaire installation location (ZP - 16) to the Provider before the luminaire installation, the Provider is obliged to install the luminaire in the new location at its own expense, in accordance with the Contracting Entity's instructions contained in the request. The Contracting Entity

retains the right to list the storage belonging to the Contracting Entity as the location for a maximum of luminaires, provided that, at the latest within two months before the end of the Reconstruction Phase, the Contracting Entity instructs the Provider on the exact installation location for the luminaires in the storage. The cost of installation of the luminaires at the new location shall be borne by the Provider. The new installation location shall be in the Contracting Entity administrative area. In the case of change of luminaire installation location, the Provider is not obliged to maintain the Guaranteed lighting quality conditions at the new location.

Guidelines for the development of EV charging design documentation

Within design documentation, Provider shall provide location assessment and design advice related to aspects of the infrastructure design. Location assessment criteria for assessing enquiries/applications are shown below:

1. There is no other public EV charging station within 50 m
2. There is considerable number of a garage/private parking bay orphans
3. There is considerable number of EVs in public charging demand.

Once the areas of focus were identified, the next step shall be to select the location of light poles that would have the EV chargers. To accomplish that objective defining the Lighting distribution cabinet is the priority. To define them the following steps were followed:

1. Review the inventory of the electrical light pole infrastructure,
2. Understand the physical status of the existing infrastructure,
3. Filtering the existing distribution cabinet that could be more suitable for the project,
4. Analysing the load capacity of the distribution cabinet pre-selected,
5. Analysing the capacity of protection in distribution cabinets,
6. Calculating the voltage drop on the light poles of the distribution cabinet selected,
7. Making sure that the Contracting entity has enabled 24/7 voltage on chosen lampposts to ensure charging service at all times.

When choosing locations for EV chargers Provider must be aware of the distribution cabinet and power line limitations:

- Maximum allowable ampacities of the existing cable;
- Maximum voltages drop of 3% for branch circuits.

Within design documentation Provider must prove that all selected locations are suitable for Charge posts implementation. Design shall include but not be limited to aspects of the infrastructure design that impact on the method of communication between the Provider and the Charge post (e.g. quality of 3G or 4G networks and considering wired communication in location where 3G or 4G networks are weak. Optionally, PLC communication might apply).

The design documentation shall contain a description of the service, a plan of implementation, technical specifications of the equipment to be installed with a detailed quantity and cost calculation. A detailed specification of the equipment and works needs to be drawn up. The cost of the investments agreed upon, which includes all planned works and materials, needs to be estimated.

In part A of this document, the Contracting Entity defined the minimum technical requirements for the EV chargers. The design documentation shall only contain the technical solution that meets the requirements referred to in this document and the Tender.

The equipment must be designed in a way to facilitate inspection and maintenance. It must function correctly in all expected operating conditions, i.e. all expected conditions of use and all expected environmental conditions. All equipment needs to have adequate protection in order to prevent any possible damage. Protection must comply with the relevant rules of the profession, occupational safety and fire protection.

Provider must also take into consideration works and material needed for upgrade of public lighting cabinet regarding the implementation of Charge posts (e.g. replacement or adding additional circuit breakers, overvoltage protection, emergency switches or other required equipment).

Guidelines for development of communication technologies design documentation

Within design documentation, Provider shall provide location assessment and design advice related to aspects of the infrastructure design. Location assessment criteria for assessing enquiries/applications are shown below:

1. There is power and lighting infrastructure suitable to fit street side antennas
2. There is a communication backbone within 50m

Once the areas of focus were identified, the next step was to select the location of light poles that would have the communication technology in a form of a street side antennas. To accomplish that objective defining the lamppost is the priority. To define them the following steps were followed:

3. Review the inventory of the electrical light pole infrastructure.
4. Understand the physical status of the existing infrastructure.
5. Filtering the existing lampposts that could be more suitable for the project.

Within design documentation Provider must prove that all selected locations are suitable for street side antenna implementation.

The design documentation shall contain a description of the service, a plan of implementation, technical specifications of the equipment to be installed with a detailed quantity and cost calculation. A detailed specification of the equipment and works needs to be drawn up. The cost of the investments agreed upon, which includes all planned works and materials, needs to be estimated.

In part A of this document, the Contracting Entity defined the minimum technical requirements for the street side antennas. The design documentation shall only contain the technical solution that meets the requirements referred to in this document and the Tender.

The equipment must be designed in a way to facilitate inspection and maintenance. It must function correctly in all expected operating conditions, i.e. all expected conditions of use and all expected environmental conditions. All equipment needs to have adequate protection in order to prevent any possible damage. Protection must comply with the relevant rules of the profession, occupational safety and fire protection.

Provider must also take into consideration works and material needed for the implementation of street side antennas (e.g. mounting brackets, power cabinets, backbone stretch cables etc.).

Guidelines for development of Smart City applications design documentation

Within design documentation, Provider shall provide location assessment and design advice related to aspects of the infrastructure design. Location assessment criteria for assessing enquiries/applications are shown below:

1. There is power and lighting infrastructure suitable to fit environment sensors
2. The lamppost is fit to cater power box and solar panel

Once the areas of focus were identified, the next step was to select the location of light poles that would have the communication technology in a form of a street side antennas. To accomplish that objective defining the lamppost is the priority. To define them the following steps were followed:

3. Review the inventory of the electrical light pole infrastructure.
4. Understand the physical status of the existing infrastructure.
5. Filtering the existing lampposts that could be more suitable for the project.
6. Analysing the load capacity of the distribution cabinet pre-selected.

Within design documentation Provider must prove that all selected locations are suitable for environment sensors implementation.

The design documentation shall contain a description of the service, a plan of implementation, technical specifications of the equipment to be installed with a detailed quantity and cost calculation. A detailed specification of the equipment and works needs to be drawn up. The cost of the investments agreed upon, which includes all planned works and materials, needs to be estimated.

In part A of this document, the Contracting Entity defined the minimum technical requirements for the street side antennas. The design documentation shall only contain the technical solution that meets the requirements referred to in this document and the Tender.

The equipment must be designed in a way to facilitate inspection and maintenance. It must function correctly in all expected operating conditions, i.e. all expected conditions of use and all expected environmental conditions. All equipment needs to have adequate protection in order to prevent any possible damage. Protection must comply with the relevant rules of the profession, occupational safety and fire protection.

Provider must also take into consideration works and material needed for the implementation of street side antennas (e.g. mounting brackets, power cabinets, solar panels etc.).

Control

In order to ensure the execution of the Contract in accordance with the standards defined in this document, during the MCC Implementation Phase and the Designing Phase, the Contracting Entity shall perform control in accordance with this chapter. In case that the control shows that the subject of control does not satisfy the Contracting Entity's requests, the Contracting Entity will not grant the appropriate approval, thereby precluding the Provider from continuing with the next phase, i.e. without the Approval of the design documentation, the Provider cannot begin with the Reconstruction and/or Modernisation Phase. If the control shows that the subject of control meets the Contracting Entity's requests, the Contracting Entity shall give the appropriate approval to the Provider. The Approvals that the Contracting Entity grants in the MCC Implementation Phase and the Designing Phase are:

- Approval of the MCC Conceptual Design (ZP - 03);
- Design documentation approval (ZP - 05).

The compliance of the Contracting Entity shall in no way increase the liability of the Contracting Entity and/or cause it to assume any related risks in the remaining Contract implementation periods.

The Provider shall not order luminaires and other parts, elements and equipment before obtaining the Contracting Entity's approval of the Design documentation (ZP - 05), i.e. the Contracting Entity shall not recognise any part, element or equipment costs that occurred before the Contracting Entity's approval of the Design documentation (ZP - 05).

5.1. Control of luminaire types

Before drafting the Design documentation, the Provider is obliged to provide the Contracting Entity with a list of luminaire types for typical profiles of illuminated areas in order for the Contracting Entity to choose the luminaires for specific installation locations. Along with the list of luminaires it is necessary to deliver a drawing, layout, side view and a 3D visualisation for every luminaire type from the list of luminaire types. **If the Provider does not offer 5 or more luminaire types for every typical profile of the illuminated area or if two or more offered luminaire types have the same stylistic features on the outside of the luminaire or if the offered luminaire types do not meet the requirements from this document, the Contracting Entity shall terminate the Contract due to the Provider's fault and collect the performance guarantee.**

Within 5 days after the delivery of the luminaire type lists, the Contracting Entity shall present the Provider with the request for delivery of all or particular luminaires (ZP - 17), which will be examined in accordance with the requirements referred to in this document. Within 15 days of receiving the request for delivery of particular luminaires, the Provider shall deliver samples of the luminaire types, along with the related documents that prove the compliance with the Contracting Entity's requirements referred to in this document to the Contracting Entity's address. The evidence shall be submitted in National language. If written in another language, it needs to be translated into National language with the delivery of the translation and the original evidence.

5.1.1. Control of compliance with the lighting quality requirements

In the phase of control and choice of luminaire type, the lighting quality calculations need to prove that typical sections comply with all conditions defined by the ..... EN 13 201-2:2016 standard. Lighting quality calculations are carried out for each typical section in the Relux (version …….. or newer) or Dialux evo (version ……. or newer). The Provider is obliged to create and provide the Contracting Entity with the lighting quality calculations for every typical profile referred to in chapter 2.2 for every offered luminaire type. Along with the lighting quality calculations, the Provider shall

deliver an electronic record with the IES or LDT files used in lighting quality calculations, as well as electronic versions of the lighting quality calculations exported from Relux (version …….. or newer) or Dialux evo (version …… or newer)for each luminaire. The electronic records shall be delivered on a USB stick. A test report issued in accordance with ..... EN 13032-1, ... EN 13032-4 standards issued by a laboratory accredited in accordance with ..... EN ISO/IEC 17 025 must be submitted for the photometric files used in lighting quality calculations. It is necessary to deliver a confirmation of appropriate laboratory accreditation issued by the national accreditation body in accordance with the Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/93. The use of photometric files modified in comparison to those created in an accredited laboratory in accordance with ..... EN ISO/IEC 17 025 is not allowed (the provision on equivalence applies to all the above mentioned standards).

As an exception, if the used photometric files have been modified with regard to test reports on measuring the luminance intensity distribution in accordance with ..... EN 13 032-1, ... EN 13032-4, IES LM 79-08 and CIE 121-1996 standards (the provision on equivalence applies to all the above mentioned standards), the following additional documentation must be submitted:

- Test reports on measuring the output luminous flux of a luminaire from the same type of luminaires (the same light distribution properties) by application of the relative measurement method (showing the ratio of the output luminous flux of the luminaire to the output luminous flux of the light source used, i.e. the light losses of the luminaire). The light distribution properties of a luminaire whose photometric file has been modified must be identical to the light distribution properties of the luminaire for which a test report on measuring the luminance intensity distribution in accordance with ..... EN 13 201-2:2016, ... EN 13 032-1, EN 13032-4, IES LM 79-08 and CIE 121-1996 standard has been submitted (the provision on equivalence applies to all the above mentioned standards).
- A test report on measuring the output luminous flux of the LED module used in a luminaire with modified photometric files.

5.1.2. Control of compliance with technical requirements

For each luminaire, it is necessary to provide evidence proving that the proposed technical solution meets the Contracting Entity's requirements. The evidence shall be delivered electronically on a USB stick (Table 13).

Table 13 List of evidence and technical requirements referred to

Evidence	**Requirement number referred to in PART A of the Technical Requirements – Minimum Technical Requirements**
ENEC certificate	1.3
Internet database accompanied by the list of certified DALI 2.0 products (D4i)	2.3, 3.8, 3.9, 3.10, 3.11, 3.12, 3.13, 3.14, 3.15, 3.16, 3.17, 3.18, 4.7, 4.8, 7.3, 8.1, 8.2, 8.3, 8.4, 8.5, 8.6
Test report in accordance with IEC TR 62778:2014 issued by the laboratory accredited in accordance with ..... EN ISO/IEC 17 025 or equivalent	4.4

Test report in accordance with IES LM 80-08 - Approved Method: Measuring Lumen Maintenance of LED Light Sources *Approved Method: Measuring Lumen Maintenance of LED Light Sources* or IES LM 80-15 - Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules) *Approved Method:* Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules) issued by laboratory accredited in accordance with ..... EN ISO/IEC 17 025 (the provision on equivalence applies to all the above mentioned standards)	4.6
Test report in accordance with ..... EN 55015:2013, ... EN 61000-3-2:2006 + A1:2009 + A2:2009, ... EN 61000-3-3:2013, ... EN 61547:2009 issued by laboratory accredited in accordance with ..... EN ISO/IEC 17 025 (the provision on equivalence applies to all the above mentioned standards)	1.4
Test report in accordance with ..... EN 13032-1, ... EN 13032-4, CIE 025/E:2015 issued by laboratory accredited in accordance with ..... EN ISO/IEC 17 025 (the provision on equivalence applies to all the above mentioned standards)	1.1, 4.1, 4.2, 4.3, 4.5, 7.1
Test report in accordance with ..... EN 60598-1:2015, ... EN 60598-2-3:2009 issued by laboratory accredited in accordance with ..... EN ISO/IEC 17 025 (the provision on equivalence applies to all the above mentioned standards)	1.2, 2.1, 2.5, 3.1, 3.2, 3.3
Test report in accordance with the ..... EN 61643 standard published by laboratory accredited in accordance with ..... EN ISO/IEC 17 025 (the provision on equivalence applies to all the above mentioned standards)	5.1, 5.2
Test report in accordance with ..... EN 62262:2008 issued by laboratory accredited in accordance with ..... EN ISO/IEC 17 025 (the provision on equivalence applies to all the above mentioned standards)	2.2
Statement / Manufacturer's technical catalogue	Other
Field laboratory for testing the compliance of the technical solution with the ..... EN 13 201-2:2016 standard or equivalent (the Contracting Entity is responsible for the testing area)	Lighting quality requirements

The evidence shall be submitted in _____language. If written in another language, it needs to be translated into _____ with the delivery of the translation and the original evidence.

The rule of equivalence is valid for all of the above standards, certificates and test reports; i.e. test reports drawn up in accordance with an equivalent standard may be submitted, with the equivalence criterion being the test procedure and instructions, requirements for the testing equipment and persons performing the tests, standardised test conditions and test reports.

For every delivered test report, it is necessary to provide a confirmation of appropriate accreditation of the laboratory that issued the test report. Accreditation must be issued by the national accreditation body in accordance with the Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/93. The accreditation must clearly show the scope of testing for which the laboratory is accredited.

5.1.3. Independent testing

If, during the control of luminaire types, the Contracting Entity should have any doubts in relation to the documents serving to prove that the minimum technical requirements under this Document have

been met, it will request that such a technical solution be tested in an adequate laboratory, in line with this chapter. The Contracting Entity will express doubt if, in particular:

- The Provider does not deliver all necessary evidence for the minimum technical requirements in accordance with this Document or delivers documentation from which the compliance with the Contracting Entity's requests is not clear;
- If the data in the delivered documentation is ambiguous (e.g. test report data differ from the data set out in the technical catalogues/online catalogues or in other parts of the tender documentation);
- If a submitted test report does not correspond to the proposed technical solution;
- If a submitted test report was not drawn up by an accredited laboratory in accordance with the criteria set out in the table below (Table 14);

The lighting quality and energy properties of the proposed solution will be subject to inspection for the luminaires of the Contracting Entity's choice. If, during the process of control of the luminaire types, the Contracting Entity should have any doubts with regard to the delivered documentation, the Contracting Entity shall have the right to send a luminaire sample to the appropriate laboratory for verification of compliance with the requirements set out in this Document.

The Contracting Entity shall select an appropriate laboratory in accordance with the minimum eligibility criteria listed in the table below (Table 14).

Table 14 List of criteria which the laboratories for independent control have to meet

Description of laboratory	**Requirement items referred to in Chapter 1 checked in the laboratory**
Accredited according to the requirements of the ..... EN ISO/IEC 17 025 standard for testing according to methodology defined within ..... EN 13032-1, ... EN 13032-4 (the provision on equivalence applies to all the above mentioned standards)	1.1, 4.1, 4.2, 4.3, 4.5, 7.1
Accredited according to the requirements of the ..... EN ISO/IEC 17 025 standard for testing according to methodology defined within ..... EN 55015, ... EN 61000-3-2, ... EN 61000-3-3, EN 61547 (the provision on equivalence applies to all the above mentioned standards)	1.4
Accredited according to the requirements of the ..... EN ISO/IEC 17 025 standard for testing according to methodology defined within ..... EN 60598-1, ... EN 60598-2-3 (the provision on equivalence applies to all the above mentioned standards)	1.2, 2.1, 2.5, 3.1, 3.2, 3.3
Accredited according to the requirements of the ..... EN ISO/IEC 17 025 standard for testing according to methodology defined within ..... EN 61643 (the provision on equivalence applies to all the above mentioned standards)	5.1, 5.2
Accredited according to the requirements of the ..... EN ISO/IEC 17 025 standard for testing according to methodology defined within ..... EN 62262 (the provision on equivalence applies to all the above mentioned standards)	2.2
Accredited according to the requirements of the ..... EN ISO/IEC 17 025 standard for testing according to	4.4

methodology defined within IEC TR 62778 (the provision on equivalence applies to all the above mentioned standards)	
Field laboratory for testing the compliance of the technical solution with the ..... EN 13 201-2:2016 standard (the Contracting Entity is responsible for the testing area) (the provision on equivalence applies to all the above mentioned standards)	Lighting quality requirements

A 5% measuring tolerance is allowed for photometric testing of correlated colour temperature.

The rule of equivalence is valid for all of the above standards, i.e. a laboratory may be hired to perform relevant tests in accordance with an equivalent standard, with the equivalence criterion being the test procedure and instructions, requirements for the testing equipment and persons performing the tests, standardised test conditions and test reports.

Laboratory accreditation must be issued by the national accreditation body in accordance with the Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/93. The accreditation must clearly show the scope of testing for which the laboratory is accredited.

Should independent control show that the luminary fails to meet any of the specified requirements, the Provider shall select another technical design solution and submit all required documents proving that the specifications set out herein are met. In this case, the expenses of measurement and all related expensed shall be borne by the Provider.

5.2. Conceptual design of the Management and Control Centre

Verification of compliance of the conceptual design with the requirements set out herein is the first phase of the Management and Control Centre software implementation. The Contracting Entity will check the compliance with the requirements set out herein and grant the Provider approval of the Management and Control Centre conceptual design (ZP - 03). The Provider may then start developing the software solution. A template of the Approval of the MCC Conceptual Design can be found in the Contents of reports, approval and minutes (Annex 5 to the Energy Performance Contract, ZP - 03).

5.3. Design documentation

The Contracting Entity will assess the eligibility of the design documentation in line with the criteria set out herein, as part of its approval of the design documentation (ZP - 05). All requirements set out herein must be fulfilled in order for the Contracting Entity to grant approval of the design documentation (ZP - 05), i.e. all items in the approval form must be marked "YES".

Before granting the said approval, the Contracting Entity will check if it fulfils all requirements set out by the Energy Performance Contract, with special regard to the:

- Compliance with the specified minimum content of the Design documentation;
- Specified typical profiles of illuminated areas;
- Fulfilment of the Contracting Entity's lighting quality requirements;
- Fulfilment of the Contracting Entity's energy requirements;

- Compliance of the technical design solution with the Contracting Entity's requirements.

If the drafted design documentation is not harmonised with the requirements set out herein, the Contracting Entity will not grant approval of the design documentation.

A template of the Approval of the Design documentation can be found in the Contents of reports, approval and minutes (Annex 5 to the Energy Performance Contract, ZP - 05).

5.4. Inspection of designed luminaires

The Contracting Entity will check the compliance of the technical design solution with the requirements set out herein. If during the inspection, the Contracting Entity should have any doubts with regard to the technical design solution, the Contracting Entity shall demand that a luminaire sample be delivered to the appropriate laboratory for verification of compliance with the requirements set out herein. The Contracting Entity will express doubt if, in particular:

- The Provider does not deliver all necessary evidence for the minimum technical requirements in accordance with this Document or delivers documentation from which the compliance with the Contracting Entity’s requests is not clear;
- If the data in the delivered documentation is ambiguous (e.g. test report data differ from the data set out in the technical catalogues/online catalogues or in other parts of the tender documentation);
- If a submitted test report does not correspond to the proposed technical solution;
- If a submitted test report was not drawn up by an accredited laboratory in accordance with the criteria set out in the table below (Table 15);

The lighting quality and energy properties of the proposed solution will be subject to inspection for the luminaires in the test field according to the Contracting Entity’s request.

Upon the Contracting Entity’s request containing the data about the luminaire type to undergo verification, the Provider shall send luminaire samples to the Contracting Entity’s address. Should the Contracting Entity decide to exercise its right to check the technical properties of the luminaires in an appropriate laboratory, the Provider shall deliver a luminaire sample within 15 days from the date it receives a request to deliver the luminaire sample to the Contracting Entity’s address. The Contracting Entity shall bear all costs related to the delivery and laboratory testing of luminaires.

The Contracting Entity shall select an appropriate laboratory in accordance with the minimum eligibility criteria listed in the table below (Table 15).

Table 15 List of criteria which the laboratories for independent control have to meet

Description of laboratory	**Requirement items referred to in Chapter 1 checked in the laboratory**
Accredited according to the requirements of the ..... EN ISO/IEC 17 025 standard for testing according to methodology defined within ..... EN 13032-1, ... EN 13032-4 (the provision on equivalence applies to all the above mentioned standards)	1.1, 4.1, 4.2, 4.3, 4.5, 7.1
Accredited according to the requirements of the ..... EN ISO/IEC 17 025 standard for testing according to methodology defined within ..... EN 55015, ... EN 61000-3-2, ... EN 61000-3-3, EN 61547 (the provision on equivalence applies to all the above mentioned standards)	1.4

Accredited according to the requirements of the ..... EN ISO/IEC 17 025 standard for testing according to methodology defined within ..... EN 60598-1, ... EN 60598-2-3 (the provision on equivalence applies to all the above mentioned standards)	1.2, 2.1, 2.5, 3.1, 3.2, 3.3
Accredited according to the requirements of the ..... EN ISO/IEC 17 025 standard for testing according to methodology defined within ..... EN 61643 (the provision on equivalence applies to all the above mentioned standards)	5.1
Accredited according to the requirements of the ..... EN ISO/IEC 17 025 standard for testing according to methodology defined within ..... EN 62262 (the provision on equivalence applies to all the above mentioned standards)	2.2
Accredited according to the requirements of the ..... EN ISO/IEC 17 025 standard for testing according to methodology defined within IEC TR 62778 (the provision on equivalence applies to all the above mentioned standards)	4.4
Field laboratory for testing the compliance of the technical solution with the ..... EN 13 201-2:2016 standard or equivalent (the Contracting Entity is responsible for the testing area)	Lighting quality requirements

A 5% measuring tolerance is allowed for photometric testing of correlated colour temperature and luminous flux of the luminaire above the horizontal plane. A +0.5 measuring tolerance is allowed for photometric testing of luminous flux of the luminaire above the horizontal plane.

The rule of equivalence is valid for all of the above standards, i.e. a laboratory may be hired to perform relevant tests in accordance with an equivalent standard, with the equivalence criterion being the test procedure and instructions, requirements for the testing equipment and persons performing the tests, standardised test conditions and test reports.

Laboratory accreditation must be issued by the national accreditation body in accordance with the Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/93. The accreditation must clearly show the scope of testing for which the laboratory is accredited.

If independent testing shows that the luminaire fails to fulfil any of the specified requirements:

- The Provider shall bear all expenses of the independent testing;
- The Provider shall select another technical design solution and submit all required documents proving that the specifications set out herein are met.

5.5. Entering the design solution data into the Management and Control Centre

Upon approval of the MCC software solution (ZP - 04), the Provider can start entering static data related to the designed luminaires. Upon the acceptance of the MCC software solution and before obtaining approval of Design documentation (ZP - 05), the Provider is required to enter all designed luminaries within the scope of implementation of the Measures for improving energy efficiency of the Public Lighting System. The Contracting Entity will check if the data entered into the Management and Control Centre correspond to the design documentation, which will be one of the criteria for granting approval of the design documentation (ZP - 05).

5.6. Control of the design documentation of EV chargers

The Contracting Entity will assess the eligibility of the design documentation in line with the criteria set out herein, as part of its approval of the design documentation (ZP - 05). All requirements set out herein must be fulfilled in order for the Contracting Entity to grant approval of the design documentation (ZP - 05), i.e. all items in the approval form must be marked "YES".

If the drafted design documentation is not harmonised with the requirements set out herein, the Contracting Entity will not grant approval of the design documentation.

5.7. Control of the design documentation of communication technologies

The Contracting Entity will assess the eligibility of the design documentation in line with the criteria set out herein, as part of its approval of the design documentation (ZP - 05). All requirements set out herein must be fulfilled in order for the Contracting Entity to grant approval of the design documentation (ZP - 05), i.e. all items in the approval form must be marked "YES".

If the drafted design documentation is not harmonised with the requirements set out herein, the Contracting Entity will not grant approval of the design documentation.

5.8. Control of the design documentation of Smart City applications

The Contracting Entity will assess the eligibility of the design documentation in line with the criteria set out herein, as part of its approval of the design documentation (ZP - 05). All requirements set out herein must be fulfilled in order for the Contracting Entity to grant approval of the design documentation (ZP - 05), i.e. all items in the approval form must be marked "YES".

If the drafted design documentation is not harmonised with the requirements set out herein, the Contracting Entity will not grant approval of the design documentation.

Part C of the Output specification – requirements during the reconstruction and/or modernisation phase

In this part of Smart EPC technology output specification technical requirements in the reconstruction and/or modernisation phase in accordance with the Energy Performance Contract are set.

The Reconstruction and/or Modernisation Phase spans from the moment of approval of the design documentation to the moment of acceptance of the Measures for improving energy efficiency of the Public Lighting System.

In addition to the technical properties and parameters, this part also sets out the procedures to be applied by the Contracting Entity and the Provider when checking the compatibility of the public lighting system with the technical requirements set out herein.

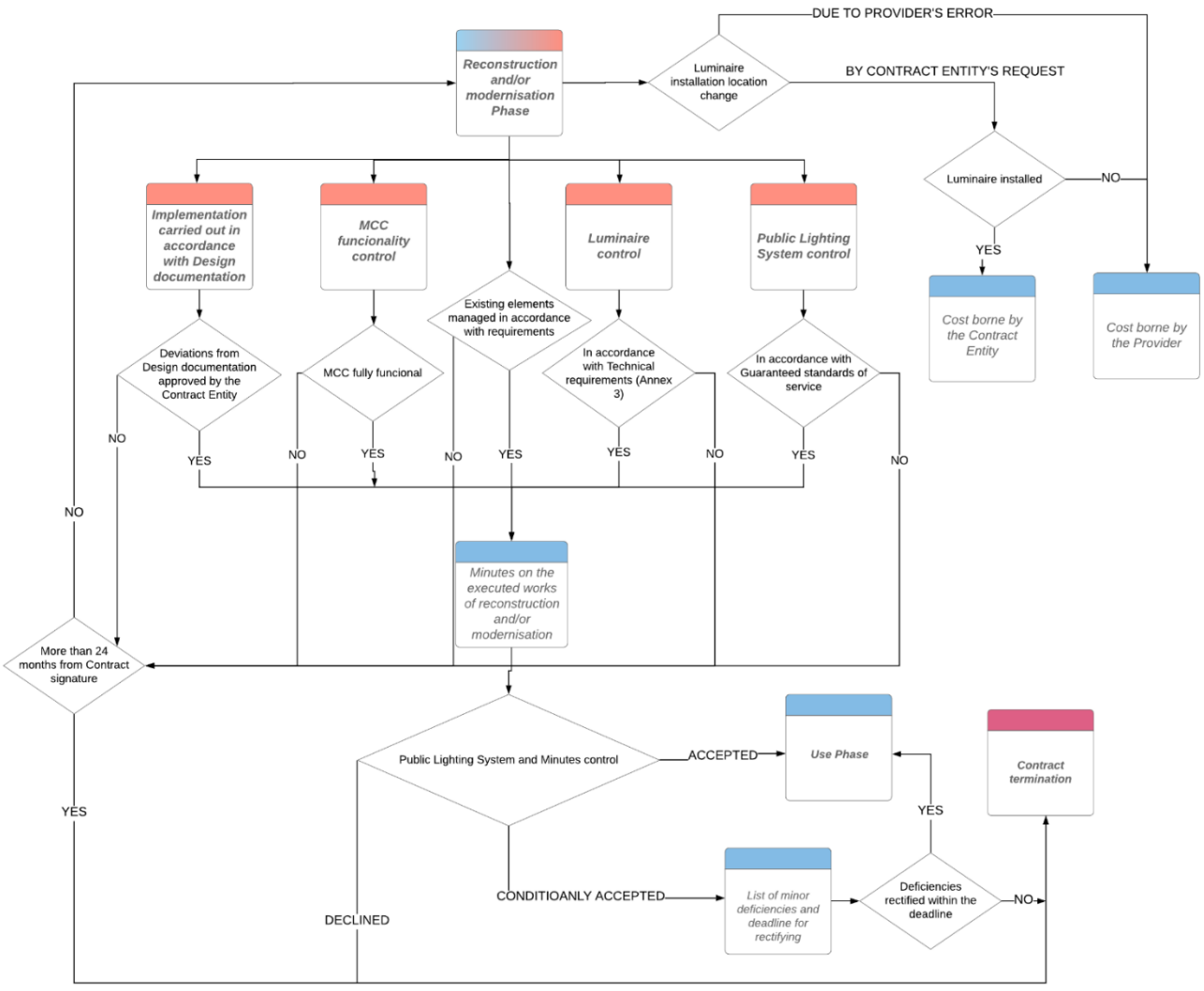

Image 4 Workflow in the Reconstruction and/or Modernisation Phase

Guidelines for programming and implementing the MCC

Upon obtaining the Contracting Entity's Approval (ZP - 03) of the Conceptual design for the Management and Control Centre, the Provider can start programming the MCC. Programming the MCC must be in compliance with the Conceptual Design and the requirements referred to in this document. All potential changes in terms of execution details of the MCC in relation to the Conceptual Design shall be recorded and approved by the Contracting Entity.

The Provider undertakes to submit and present fully functional MCC within the deadline defined by the Energy Performance Contract. If the MCC is fully functional, the Contracting Entity will grant approval to the Provider to start entering all necessary static data from the design documentation (Main project). A template of the Approval of the MCC programme solution can be found in the Contents of reports, approval and minutes (Annex 5 to the Energy Performance Contract, ZP - 04).

Before obtaining approval of the Design documentation (ZP - 05), the Provider is obligated to enter the designed solution, i.e. all planned luminaires with the luminaire's basic technical data (static data). This way the Contracting Entity has insight into the works execution dynamics.

The Provider can elaborate on the MCC's smaller deficiencies, until the modernisation and/or reconstruction of the public lighting system is finished, i.e. until the Adoption of the Measures for improving the energy efficiency of the Public Lighting System. In case of significant MCC deficiencies, the Contracting Entity shall not approve the programme solution for the Management & Control Centre (ZP - 04). Significant deficiencies are the impossibility and/or non-functionality of static data entering, reading dynamic data or creating Reports defined by this document.

Minimum technical requirements

The Measures for improving energy efficiency of the Public Lighting System must be implemented in accordance with the design documentation for the public lighting system reconstruction and/or modernisation approved by the Contracting Entity. If during reconstruction and/or modernisation arises a need for unplanned but necessary amendments to the design documentation, the Provider shall notify the Contracting Entity thereof, and the Contracting Entity is required to approve any amendments in writing. An approval template for the deviations from the design documentation can be found in the Contents of reports, approval and minutes (Annex 5 to the Energy Performance Contract, ZP - 06).

The implementation of the Measures for improving energy efficiency of the Public Lighting System and subsequent use of the public lighting system must not have a detrimental effect on people's lives and/or property. Working on live electrical equipment during the implementation of the Measures is not allowed. Any material used for modernisation must not have a detrimental effect on health and the environment. The works and activities must be performed in accordance with the *Health and Safety at Work Ordinance* (OG 105/20). The entire installation procedure must be carried out in accordance with the design documentation, attached drawings, the cost estimate, these terms and conditions and the applicable (i.e. local) technical regulations. Before the commencement of works and the supply of necessary materials, the Provider shall perform an on-site inspection. Given that under this Contract the Provider is also the investor, the Provider shall ensure that all relevant regulations of the Republic of …… are observed during the service delivery. If the inspection carried out before the commencement of works and the supply of materials shows that amendments to the design documentation are needed in terms of technical solutions and/or the choice of materials, the Provider shall notify the Contracting Entity and the Supervising Engineer thereof in writing, and obtain approval from the Contracting Entity.

The Provider shall be responsible for arranging the execution of works. A detailed works plan must be agreed upon with the Contracting Entity and other involved stakeholders (Local power utility company …….).

Before the commencement of works on the removal of luminaires and the installation of the new technical and technological solution, it is necessary to secure the site by disconnecting the power supply and to prevent the switching on or occurrence of voltage in the lighting circuit during the execution of works.

The persons working on the removal/installation of luminaires must be trained in safety and capable of working at height (special working conditions).

During reconstruction and/or modernisation, the Provider is obliged to ensure unobstructed traffic on the road section where the works are performed. They should be organised in such a way not to obstruct the traffic, or in a way that interruptions last as short as possible, without causing any traffic obstructions. After the works have been completed, the site shall be returned to its original state. Before putting the public lighting into operation, it is necessary to verify that all requirements for the safe operation of the public lighting system have been fulfilled.

Should the Provider, during the course of execution of works, due to technically justified reasons, not be able to install a luminaire type in accordance with the Minutes on the choice of luminaire type and/or design documentation, it shall inform the Contracting Entity thereon and propose modifications. Before continuing the works, the Contracting Entity needs to give the Provider approval of the proposed modifications to the luminaire type (ZP - 02).

The works must be carried out in accordance with the drafted design documentation. Only materials that meet the necessary and the required quality level can be installed. For this reason, it is necessary to provide quality assurance evidence (National or equivalent) in accordance with legislation, technical regulations and the main design. All installed equipment must be delivered, tested and checked in accordance with regulations and standards ensuring the quality level required by this document. It is not permitted to install used luminaires and materials. The Provider shall perform functional and any other necessary system tests after the installation of new luminaires and draw up reports that will be attached to the Minutes on the executed works of reconstruction and/or modernisation (Annex 5 to the Energy Performance Contract, Report Content, ZP-07).

During the execution of works, the Provider shall correct or supplement the design documentation with any deviations therefrom. The Contracting Entity must approve any such deviations in advance. If the Contracting Entity fails to take a position within the agreed deadline, it shall be considered that it agrees with the deviations. Upon the completion of works, the Provider must perform all measurements and tests required by the applicable regulations for the installation in question and deliver verified test results to the Contracting Entity.

The Provider shall, during the execution of works, update the MCC data about the performed activities on a daily basis to enable the Contracting Entity to monitor the service delivery dynamics and quality.

The existing elements of the public lighting system that will be removed and replaced by new ones due to their age and inadequacy, as well as any other hazardous waste, need to be managed in accordance with the contractual provisions and the legislative framework in force.

Before putting into operation the public lighting system, it is necessary to thoroughly review and examine all elements which have been a subject of reconstruction and/or modernisation, as well as those that may have been affected by the reconstruction and/or modernisation activities. Valid certificates and protocols must be issued in relation to the tests performed. Upon completion of the construction works, the site must be restored to the original state.

The Contracting Entity has set out the acceptance dynamics of the implemented Measures for improving energy efficiency of the Public Lighting System in the Contract. The Contracting Entity shall start carrying out fee payments to the Provider upon acceptance of the Public Lighting System.

If, during the execution of works related to execution of works within the Measures for improving energy efficiency, the Provider detects any deficiencies of the Public Lighting System that is not in the scope of the implementation of the Measures, it shall notify the Contracting Entity thereof in writing. The Contracting Entity is responsible for taking further steps to remedy such deficiencies.

Listed below are some of the examples of Public Lighting System deficiencies falling outside the scope of implementation of the Measures for improving energy efficiency and requiring a written notification to the Contracting Entity:

- Defective public lighting cabinet equipment:
  - Defective or incorrectly adjusted control system (timer, light switch, etc.);
  - Other irregularities of the equipment in public lighting cabinets;
- Feeder line deficiencies (line interruption, damaged insulation or any other feeder line deficiency that could pose a hazard to persons and/or equipment within the Public Lighting System;
- Luminaire post deficiencies (posts are not vertical or founded safely (unstable) or there is any other deficiency or damage to luminaire posts that could pose a hazard to persons and/or equipment within the Public Lighting System (its parts and elements)).

The Provider is obliged to protect all equipment installed under the Measures for improving energy efficiency of the Public Lighting System from surges, i.e. from lightning and other transient surges that may occur in the part of the electricity system covered by the Measures for improving energy efficiency and thus increase the risk of damage and/or termination of operation of the installed equipment. The Provider will assume the risk of failure of the installed equipment due to a lightning strike (which does not represent a case of force majeure), and it may upgrade the surge protection in luminaires or in other parts of the Public Lighting System (by installing cathodic protection in the form of surge arresters etc.). The Provider will be responsible for obtaining approval of a third party (a distribution system operator or similar) should the planned works require so, with no interference from the Contracting Entity. Taking the above mentioned into consideration, lack of surge protection in the Public Lighting System cannot be a Public Lighting System deficiency that the Provider alerts the Contracting Entity about.

Guaranteed standards of service

Service standards of the public lighting system contribute to its increased quality and availability as well as energy and cost savings. The Contracting Entity has outlined the minimum service standards, which refer to the:

- Functionality and correctness of the parts, elements and equipment;
- Guaranteed installed active power of the luminaires;
- Guaranteed lighting quality parameters of the area covered by the scope of implementation.

The Provider has outlined the guaranteed standards of service in both the Tender and the design documentation. The standards must be better than or equal to the minimum service standards that the Provider is required to maintain at the guaranteed level throughout the Contract duration.

In case of failure to meet even one of the three aforementioned guaranteed standards of service, it shall be considered that the reconstruction and/or modernisation has not been carried out according to these technical requirements and the Contracting Entity shall deny the Acceptance of the Measures for improving energy efficiency.

The Contracting Entity shall bear all measurement costs, except in case that the measurement shows that certain Guaranteed standards of service have not been met. In such a case, the Provider shall bear the a measurement.

Functionality and correctness of parts, elements and equipment

The Provider shall ensure that the parts, elements and equipment installed under the Measures for improving energy efficiency of the Public Lighting System are correct and fully functional throughout the Contract duration. Should any element, part or equipment (e.g. a luminaire) installed under the Measures for improving energy efficiency of the Public Lighting System be malfunctioning, defective or non-compliant with the Technical Requirements for a longer period than permitted, the Contracting Entity shall reduce the service fee set out in the Contract. The Contracting Entity requires that the Management and Control Centre remain fully functional and available throughout the Contract duration.

The deadline for rectifying malfunctions of a non-functional or defective part, element or equipment is defined by this document. If the malfunctioning or defective part, element or equipment of the luminaire is not replaced within the specified period, the Contracting Entity shall reduce the service

fee in accordance with the calculation defined in the Contract. A failure, defect or malfunctioning should be reported electronically (via the MCC). The deadline for rectifying malfunctions of non-functional or defective luminaire or Management and Control Centre begins to run in the moment of recording the malfunction.

Functionality of parts, elements and equipment refers to determination if the parts, elements and equipment installed under the Measures for improving energy efficiency of the Public Lighting System comply with applicable regulations, if they have all necessary certificates (stated in this document), if they are safe for use (i.e. they do not pose any risk to people, maintenance staff, cars and other means of road transport, other movable and immovable property of the Contracting Entity or any third party, etc.), as well as determining that they show no signs of corrosion or other structural and mechanical damage, and that they are fully functional and in compliance with these Technical Requirements.

The functionality of equipment and elements refers to determining whether all parts of the Measures for improving energy efficiency fulfil their task. The functionality of equipment and elements, regarding functional units, is divided into two basic parts: luminaires and communication equipment (A) and MCC (B).

In addition to the above conditions, the functionality of a luminaire also refers to determining if it produces the specified level of light and if it is correctly positioned at the luminaire post. A luminaire is considered to be non-functional in the following cases:

- The luminaire does not emit light;
- The luminaire is not correctly positioned at the pole location;
- The luminaire does not read and/or send the data to MCC or the sent data is wrong;
- The luminaire's arm is not of appropriate length;
- The luminaire does not comply with the Contracting Entity’s Technical Requirements;
- The installed active power of the luminaire changed for more than 5% between two readings without changing the luminaire mode of operation;
- If the luminaire is repeatedly not functional for a shorter period of time and then, with no Provider intervention, it independently begins to function again (e.g. flickering, irregular submission of read data etc.);
- The dimming regime of the luminaire does not comply with the dimming regime parameters set within MCC ;
- Errors in the communication module of the luminaire (does not read/send necessary data, does not respond to data sent from the MCC etc.).

Via the ripple control receiver, the MCC will read the moment of switching on the public lighting. If the luminaire functioning is not registered in the MCC within 30 minutes of registering the switching on of the public lighting system, the luminaire shall be considered non-functional.

The functionality of the Control and Management Centre is manifested in the ability to use all programme features and modules in accordance with the Contracting Entity’s requirements referred to as specified this document and in the functional communication line between MCC and the luminaire communication module (wireless communication). If the MCC loses connection to more than 2% of the luminaires within the scope of implementation of the Measures for improving energy efficiency, the MCC shall be considered non-functional.

The Client will record the non-functionality of the Control and Management Centre automatically through the MCC or when that is not possible, due to the unavailability of the MCC, by hand and email.

The Provider shall bear the costs of rectifying any deficiencies of the elements, parts and equipment installed under the Measures for improving energy efficiency of the Public Lighting System i.e. the costs of replacing them with new, correct and functional equipment, parts or elements.

Guaranteed installed active power of the Public Lighting System

After the execution of works, the Nominal active power of the Public Lighting System shall be lower than or equal to the Guaranteed nominal active power of the Public Lighting System specified in the Tender and Design documentation (Annex 8 to the Contract, Tenderer's input data, cell D7).

After the execution of works, the measured Nominal active power of the Public Lighting System shall be lower than or equal to the Guaranteed installed active power of the Public Lighting System in all dimming regimes, ranging from 10% to 100% of the nominal active power.

Guaranteed lighting quality conditions

The Provider shall maintain the Guaranteed lighting quality conditions throughout the Contract duration, in line with the parameters given below (Table 16), respecting all relevant legislation and regulations in Republic ……..

Table 16 List of parameters to be verified when checking the compliance with the Guaranteed lighting quality conditions.

ROAD LIGHTING (M lighting class)			
Parameter name	**Code**	**Measurement unit**	**Equivalence criteria**
Average luminance	L	Cd/m^2	Greater than or equal to
Overall uniformity	U_0	-	Greater than or equal to
Longitudinal uniformity	U_l	-	Greater than or equal to
Relative increase of the threshold	f_{TI}	%	Less than or equal to
Lighting the surrounding area	R_{EI}	-	Greater than or equal to
PEDESTRIAN LIGHTING (P lighting class)			
Parameter name	**Code**	**Measurement unit**	**Equivalence criteria**
Average illuminance	E	lx	Greater than or equal to
Minimum illuminance	E_{min},	lx	Greater than or equal to

Change of luminaire installation location

The Contracting Entity retains the right to change the luminaire installation location in relation to the location defined in the Project Scope (Annex 1 to the Contract) or the Design documentation. If the Contracting Entity has delivered a request to change luminaire installation location (ZP - 16) to the Provider before the luminaire installation, the Provider is obligated to install the luminaire in the new location. All costs of removing the luminaire and installing it to the new location shall be borne by the Provider. In this case, the Provider is not obliged to maintain the Guaranteed lighting quality conditions at the new location. If the Contracting Entity has delivered a request to change luminaire installation location (ZP - 16) to the Provider after the luminaire installation, the Provider is obligated

to enable the Contracting Entity instal the luminaire in the new location. All costs of removing the luminaire and installing it to the new location shall be borne by the Contracting Entity.

If, during the execution of filed works, the Provider detects any LED technology luminaires, which comply with the Project Scope (Annex 1 to the Contract), it shall warn the Contracting Entity thereof. The Contracting Entity shall give it instructions on whether to change the luminaires in question, i.e. instructions on possible change of installation location. In this case, the Provider shall install the location in a new location according to the Contracting Entity's instructions contained in the request. The new installation location shall be in the Contracting Entity administrative area. In this case, the Provider is not obliged to maintain the Guaranteed lighting quality conditions at the new location.

Implementation of EV chargers

Provider shall ensure that **positioning of electrical equipment is appropriately placed:**

a. Substations, transformers and switchgear are positioned in locked, gated and fenced enclosures suitably located and positioned to restrict access for unauthorised personnel and are fitted with intruder detection, fire suppression and fire alarms systems.
b. Enclosures are designed from a "Human Factors Engineering" perspective.
c. All above-ground structures are positioned such that they are:
    i. Away from vehicle routes to reduce risk from vehicular impact.
    ii. Discouraging intention or inadvertent access by unauthorised personnel.
    iii. Not preventing or restricting future developments of open site areas.
    iv. Not detracting from the visible appearance of the branding.
    v. Not reducing access or egress of distribution vehicles off-loading fuel or delivering goods.

Provider shall ensure that charge posts are positioned such that they are:

a. Giving due consideration to the safety of all users of the site (including customers, other drivers and pedestrians) as customers approach, queue for, use and leave the charge post bay and otherwise move around the site and use the site facilities.
b. Affording safe and easy operation by the customer, considering for example:
    i. The size of the bay, which should match the size of EV expected and be at least 3.0m wide by 5.5m long
    ii. The position of the charge post in relation to the bay, which should allow cables and connectors to reach the charging points of the majority of EV models available in the market without requiring the customer of the charge post to reverse into the bay or otherwise drive against the permitted traffic flow on the site.

Positioning of safety features

Provider shall ensure that the charge posts are adequately illuminated to at least 350 lux

Positioning of signage

Provider shall ensure that positioning of signage elements is in accordance with the instructions issued by The City from time to time

Provider shall ensure that the appropriate information stickers and SIM cards (if needed) are provided for insertion into or application onto the Charge post before or during commissioning. Provider shall ensure that the SIM card subscription (if needed) includes adequate data for both Provider's and Charge post manufacturer's data requirements.

Provider shall ensure that information for the customer directly related to charging activity including payment and usage instructions and their charging status is clearly and accurately displayed, within the scope of what is possible for the Charge post, on the Charge post in local language and English language.

Implementation of communication technologies

Provider shall ensure that **positioning of 5G street side antenna equipment is appropriately placed:**

d. All antenna related equipment are in locked, gated and fenced enclosures suitably located and positioned to restrict access for unauthorised personnel and are fitted with intruder detection, fire suppression and fire alarms systems.
e. Enclosures are designed from a “Human Factors Engineering” perspective.
f. All above-ground structures are positioned such that they are:
    i. Away from vehicle routes to reduce risk from vehicular impact.
    ii. Discouraging intention or inadvertent access by unauthorised personnel.
    iii. Not preventing or restricting future developments of open site areas.
    iv. Not detracting from the visible appearance of the branding.
    v. Not reducing access or egress of distribution vehicles off-loading fuel or delivering goods.

Implementation of Smart City applications

Provider shall ensure that **positioning of environment senor equipment is appropriately placed:**

g. Power box, solar panels and sensors are positioned in locked, gated and fenced enclosures suitably located and positioned to restrict access for unauthorised personnel and are fitted with intruder detection, fire suppression and fire alarms systems.
h. Enclosures are designed from a “Human Factors Engineering” perspective.
i. All above-ground structures are positioned such that they are:
    i. Away from vehicle routes to reduce risk from vehicular impact.
    ii. Discouraging intention or inadvertent access by unauthorised personnel.
    iii. Not preventing or restricting future developments of open site areas.
    iv. Not detracting from the visible appearance of the branding.
    v. Not reducing access or egress of distribution vehicles off-loading fuel or delivering goods.

Positioning of safety features

Provider shall ensure that the charge posts are adequately illuminated to at least 350 lux.

Provider shall ensure that the appropriate information stickers and SIM cards (if needed) are provided for insertion into or application onto the environment sensor before or during commissioning. Provider shall ensure that the SIM card subscription (if needed) includes adequate data for both Provider’s and environment sensor manufacturer’s data requirements.

Content of the Minutes on the executed works of reconstruction and/or modernisation (ZP - 07)

Before acceptance of the public lighting system, the Provider shall deliver to the Contracting Entity any relevant data about the Measures for improving energy efficiency of the Public Lighting System. All relevant data needs to be submitted in the Minutes on the executed works of reconstruction and/or modernisation. The minimum contents of the Minutes can be found in the Contents of reports, approval and minutes (Annex 5 to the Energy Performance Contract).

Control

Proving the functionality of the Management and Control Centre

The programming of the Management and Control Centre in line with the accepted conceptual design and the requirements set out herein is the second phase of the Management and Control Centre implementation. Upon completion of the said activity, the Provider needs to prove to the Contracting Entity that the Management and Control Centre is fully functional. If all the requirements set out herein are fulfilled, the Contracting Entity will grant the Provider approval of the Management and Control Centre software solution (ZP - 04). A template of the Approval of the MCC programme solution can be found in the Contents of reports, approval and minutes (Annex 5 to the Energy Performance Contract, ZP - 04).

Control of works execution dynamics

The Provider shall update the MCC data on the luminaires installed within the last 24 hours on a daily basis. This will enable tImhe Contracting Entity to monitor the service delivery dynamics and to carry out the inspection of the luminaires installed.

Inspection of luminaires installed

The Provider is obliged to install the equipment specified in the design documentation approved by the Contracting Entity. If the Provider, after obtaining the design documentation approval (ZP - 05), introduces any changes in relation to the design solution, it shall inform the Contracting Entity thereof. If the design solution is modified during the execution of works, the Provider is obliged to submit evidence of compliance with the prescribed technical and lighting requirements for each modification to the design (newly proposed technical solution). The list of supporting documents proving that the modified technical solution fulfils the Contracting Entity's requirements is the same as in the design phase, as set out in Chapters 5 and 9.4. If during the execution of works, the Contracting Entity should have any doubts with regard to the compliance with the technical requirements outlined herein, the Contracting Entity will demand that a luminaire sample be delivered to an appropriate laboratory for verification of compliance with the requirements set out herein. Upon the Contracting Entity's request containing the data about the luminaire type to undergo verification, the Provider shall send luminaire samples to the Contracting Entity's address within 10 days from the date it receives a request to deliver the luminaire sample to the Contracting Entity's address. The Contracting Entity shall bear all costs related to the delivery and laboratory testing of luminaires. The Contracting Entity is entitled to select the luminaires at the installation site and carry out a laboratory test or test them at the installation site for the purpose of checking the compliance of the said sample with the requirements set out herein. The Contracting Entity will select an appropriate laboratory in accordance with the minimum eligibility criteria listed in the table below (Table 17).

Table 17 List of criteria which the laboratories for independent control have to meet

Description of laboratory	**Requirement items referred to in Chapter 1 checked in the laboratory**
Accredited according to the requirements of the ..... EN ISO/IEC 17 025 standard for testing according to methodology defined within ..... EN 13032-1, ... EN 13032-4 (the provision on equivalence applies to all the above mentioned standards)	1.1, 4.1, 4.2, 4.3, 4.5, 7.1

Accredited according to the requirements of the ..... EN ISO/IEC 17 025 standard for testing according to methodology defined within ..... EN 55015, ... EN 61000-3-2, ... EN 61000-3-3, EN 61547 (the provision on equivalence applies to all the above mentioned standards)	1.4
Accredited according to the requirements of the ..... EN ISO/IEC 17 025 standard for testing according to methodology defined within ..... EN 60598-1, ... EN 60598-2-3 (the provision on equivalence applies to all the above mentioned standards)	1.2, 2.1, 2.5, 3.1, 3.2, 3.3
Accredited according to the requirements of the ..... EN ISO/IEC 17 025 standard for testing according to methodology defined within ..... EN 61643 (the provision on equivalence applies to all the above mentioned standards)	5.1, 5.2
Accredited according to the requirements of the ..... EN ISO/IEC 17 025 standard for testing according to methodology defined within ..... EN 62262 (the provision on equivalence applies to all the above mentioned standards)	2.2
Accredited according to the requirements of the ..... EN ISO/IEC 17 025 standard for testing according to methodology defined within IEC TR 62778 (the provision on equivalence applies to all the above mentioned standards)	4.4
Field laboratory for testing the compliance of the technical solution with the ..... EN 13 201-2:2016 standard or equivalent (the Contracting Entity is responsible for the testing area)	Lighting quality requirements

A 5% measuring tolerance is allowed for photometric testing of correlated colour temperature and luminous flux of the luminaire above the horizontal plane.

If independent testing shows that the luminaire fails to fulfil any of the specified requirements:

- The Provider shall bear all expenses of the independent testing;
- The Provider shall select another technical design solution and submit all required documents proving that the specifications set out herein are met.

Control of the Public Lighting System

The Contracting Entity shall perform control of the Public Lighting System by choosing locations at random where the Guaranteed standards of service shall be tested. An expert engaged by the Contracting Entity shall test the Guaranteed standards of service.

Control of the Minutes on the executed works of reconstruction and/or modernisation

Following the reconstruction and/or modernisation of the Public Lighting System, the Contracting Entity will check the compliance of the Public Lighting System with the design documentation, i.e. the requirements set out herein. Once the Provider submits the complete Minutes on the executed works of reconstruction and/or modernisation, the Contracting Entity will check the compliance of the

technical solutions and documentation with the Provider's Tender, design documentation, Regulation on contracting and implementation of energy services in the public sector (Official Gazette no …….) and this Document. The Contracting Entity will carry out an on-site inspection of the works performed. The Contracting Entity reserves the right to check the luminaire samples installed before granting approval of the Minutes on the executed works of reconstruction and/or modernisation (ZP - 07), i.e. before accepting the Public Lighting System.

If the Minutes on the executed works of reconstruction and/or modernisation do not comply with the requirements set out herein, the Contracting Entity will decline the acceptance of Measures for improving energy efficiency of the Public Lighting System. If the Contracting Entity accepts the Public Lighting System, this will mark the beginning of the Use Phase.

If the control and tests determine that the Public Lighting System is functional, but it requires additional works and/or material for the system to fully meet the requirements and/or if minor deficiencies of the conditions listed in this document and other annexes to the Contract are observed, the Contracting Entity shall warn the Provider thereon and state the deadline for rectifying the determined deficiencies, which will mark the Conditional Acceptance of the Measures for improving energy efficiency.

Control of executed works of EV charger implementation

Following the implementation of EV chargers, the Contracting Entity will check the compliance of the implemented devices with the design documentation, i.e. the requirements set out herein. Once the Provider submits the complete Minutes on the executed works of EV charger implementation, the Contracting Entity will check the compliance of the technical solutions and documentation with the Provider's Tender, design documentation and Regulations and this Document. The Contracting Entity will carry out an on-site inspection of the works performed. The Contracting Entity reserves the right to check the equipment samples installed before granting approval of the Minutes on the executed works of reconstruction and/or modernisation.

If the Minutes on the executed works of EV chargers implementation do not comply with the requirements set out herein, the Contracting Entity will decline the acceptance of EV chargers. If the Contracting Entity accepts the implementation of EV chargers, this will mark the beginning of the EV charging billing.

Control of executed works of communication technologies implementation

Following the implementation of street side antennas, the Contracting Entity will check the compliance of the implemented devices with the design documentation, i.e. the requirements set out herein. Once the Provider submits the complete Minutes on the executed works of street side antennas implementation, the Contracting Entity will check the compliance of the technical solutions and documentation with the Provider's Tender, design documentation and Regulations and this Document. The Contracting Entity will carry out an on-site inspection of the works performed. The Contracting Entity reserves the right to check the equipment samples installed before granting approval of the Minutes on the executed works of reconstruction and/or modernisation.

If the Minutes on the executed works of street side antennas implementation do not comply with the requirements set out herein, the Contracting Entity will decline the acceptance of street side antennas. If the Contracting Entity accepts the implementation of street side antennas, this will mark the beginning of the street side antenna operation.

Control of executed works of Smart City applications implementation

Following the implementation of environment sensors, the Contracting Entity will check the compliance of the implemented devices with the design documentation, i.e. the requirements set out herein. Once the Provider submits the complete Minutes on the executed works of environment sensors implementation, the Contracting Entity will check the compliance of the technical solutions and documentation with the Provider's Tender, design documentation and Regulations and this Document. The Contracting Entity will carry out an on-site inspection of the works performed. The Contracting Entity reserves the right to check the equipment samples installed before granting approval of the Minutes on the executed works of reconstruction and/or modernisation.

If the Minutes on the executed works of environment sensors implementation do not comply with the requirements set out herein, the Contracting Entity will decline the acceptance of environment sensors. If the Contracting Entity accepts the implementation of environment sensors, this will mark the beginning of the environment sensors operation.

Part D of the Output specification – requirements during the use phase

In this part of Smart EPC technology output specification technical requirements within the Use Phase in accordance with the Energy Performance Contract are set.

The Use Phase shall start with the acceptance of the Measures for improving energy efficiency upon the end of Reconstruction and/or modernisation Phase and last until the Contract expiry and the transfer of ownership rights of the Measures for improving energy efficiency of the Public Lighting System to the Contracting Entity. The day of accepting the Measures for the improvement of energy efficiency shall be recorded in the MMC and from that day the measuring and verification of all contractual standards shall begin, i.e. the availability analysis and the fee calculation (done automatically via MMC).

The Chapter below sets out the Contracting Entity's requirements during the Use Phase.

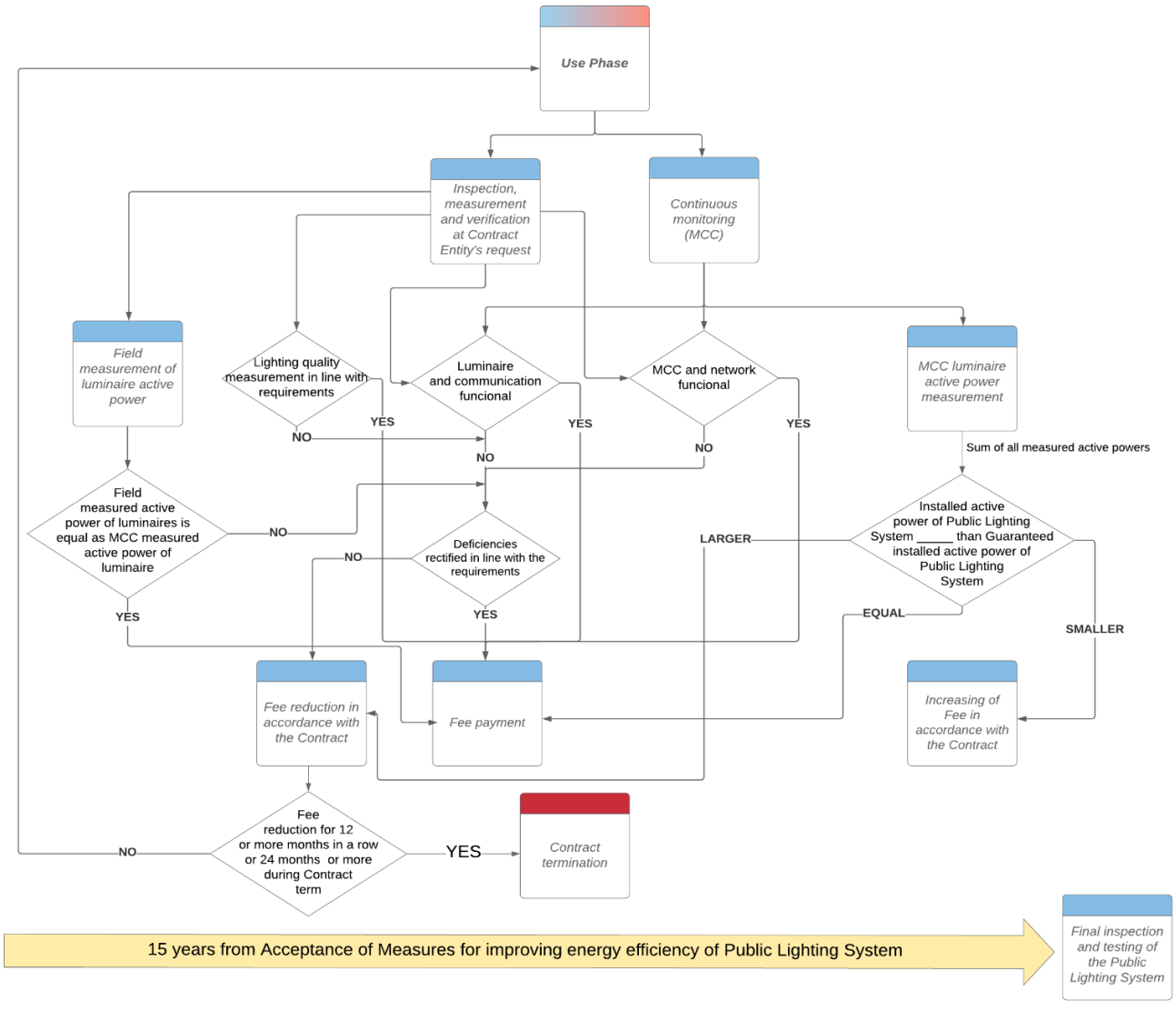

Image 5 - Workflow of the Contract execution within the Use Phase

Minimum technical requirements

Public Lighting System Maintenance

The Provider undertakes to ensure that any elements, parts and equipment installed within the Measures for improving the energy efficiency of the Public Lighting System are fully functional and correct throughout the Contract duration and warrants that no costs will be incurred to the Contracting Entity in relation to the maintenance of the parts, elements and equipment installed through the implementation of the Measures during the Contract term. The Provider shall cover the costs related to rectifying any deficiencies of the said elements, parts and equipment or those related to the replacement thereof with new, fully functional equipment, parts or elements. In the case that during the Use Phase, the luminaire type is being replaced, the Provider shall enable the Contracting Entity to choose the same or larger number of luminaire types then prescribed within this document that will be installed in accordance with this document and the Provider's Tender.

During the Contract term, the Contracting Entity is obliged to maintain the public lighting system elements not covered by the Measures for improving energy efficiency of the Public Lighting System, i.e. any parts, elements and equipment not installed in the scope of the Measures for improving energy efficiency of the Public Lighting System. The Contracting Entity shall maintain the said part of the Public Lighting System in line with the rules and standards of the profession and any applicable legal provisions. If due to a lack of maintenance, incorrectly performed maintenance or any other related negligence parts, elements or equipment installed by the Provider suffer damage, the Contracting Entity shall cover the repair costs. The surge protection system is excluded from the above due to the fact that the Contracting Entity has given the Provider an opportunity to install, modify and upgrade the surge protection system.

The Provider is obliged to protect all equipment installed under the Measures for improving energy efficiency of the Public Lighting System from surges, i.e. from lightning and other transient surges that may occur in the part of the electricity system covered by the Measures for improving energy efficiency and thus increase the risk of damage and/or termination of operation of the installed equipment. The Provider shall provide all necessary equipment for this purpose. As the Provider assumes the risk of failure of the installed equipment due to a lightning strike (which does not represent a case of force majeure), it may upgrade the surge protection (by installing cathodic protection in the form of surge arresters, etc.). The Provider will be responsible for obtaining approval of a third party (a distribution system operator or similar) should the planned works require so, with no interference from the Contracting Entity.

The Provider shall adhere to any applicable rules and regulations of the electricity distributor throughout the Contract duration and assume any associated costs (e.g. the cost of supervising the work of distributor's employees related to the replacement of defective luminaires, etc.) incurred during the fulfilment of contractual obligations.

Considering that the Provider guarantees for the proper functioning of the parts, elements and equipment (e.g. luminaires) during the term of this Contract, the Provider shall be obliged (and bear the expenses) to rectify the non-functional, defective parts, elements, equipment and those parts, elements and equipment which do not satisfy the Technical Requirements of this Contract and which have been installed within the scope of the Measures for improving energy efficiency of the Public Lighting System. The Provider shall ensure that all materials and elements that it uses are new and compliant with the certificates and the requests of manufacturers of other equipment and elements in the public lighting system. They must be compatible with the public lighting system and fully compliant with the requirements of any applicable warranties and guarantees, and have all valid certificates and attestations.

In case of changes of the geometrical parameters and the ratio of the luminaire position and the illuminated surface during the Use Phase (e.g. relocation of the existing pole luminaire posts, surface repurposing, etc.) requiring an adjustment and/or replacement of the head luminaire, console and/or the luminaire, the Contracting Entity shall cover any such costs.

The Contracting Entity will exercise due care throughout the Contract duration in order to facilitate the execution of works by coordinating with the Provider all activities related to the public lighting system, in particular with regard to the traffic regulation (at the expense of the Provider) and safe traffic circulation. The Provider shall keep a record of the replacement of worn or defective elements and organise it in a way not to, or only minimally, affect regular and normal operations of the Contracting Entity and the traffic in the area with the public lighting system. Via the MCC, the Provider shall keep a record of all such replacement activities, together with the technical specifications of the installed parts, elements and equipment. **The Provider is obliged to keep a record of all activities carried out during the Contract term via the MCC.**

At any moment, the Contracting Entity has the right to upgrade the luminaire with sensors and/or actuators onto the connector on the underside of the luminaire at its own expense, while the cost of the transfer of data from the sensor in limits defined by this document shall be borne by the Provider.

EV charging post maintenance

Provider shall show a proactive attitude in identifying and responding to issues that undermine UPTIME, and shall work in a collaborative manner with all equipment manufacturers and all third-party service providers included in provision of integrated lamppost EV charging service to ensure that sustainable solutions are implemented to address such issues.

Provider's specific contribution to achieving this shared target shall include:

- **Proactive Real Time Remote Monitoring:** Provider shall perform proactive remote monitoring of the charging posts and initiate issue resolution in an appropriate and timely manner. Provider shall have an automatic monitoring system that will notify Provider if any error occurs and if EV charging service is unavailable at any post. Regardless of automatic monitoring system, Provider shall ensure alternative manually managed diagnostics check of charging posts and their full functionality. Frequency of manuallly managed diagnostics and protocols for that task will be developed by Provider before beginning of service provision and will be regularly updated during the period of Contract if needed (if number of non-functional EV charges or number of customer complaint rises).

- **Software Updates and Integration of Firmware Updates.** Firmware update means any change to the firmware of the EV charging post. Provider shall maintain their software and back-office connection to the EV Charging posts, updating as necessary to maintain agreed levels of service for customers. Such maintenance shall include appropriate testing and integration of any firmware update issued by the manufacturer of equipment to Provider. The process, including notice periods, timelines and responsibilities for such testing and integration shall be jointly agreed by Provider and the equipment manufacturers, and Provider shall develop such process in a manner that is practical for both Provider and the equipment manufacturers and maintains agreed service levels for Customers.

Telephone HELPDESK: Provider shall provide a telephone helpdesk service which is staffed 24 hours per day, 7 days per week in in local language and which customers may contact in the event they have issues during charging attempts and the operation of the EV charging post.

- The helpdesk telephone number and EV charging post serial or identification number shall be clearly displayed on the EV charging post.
- Calls to the helpdesk shall be charged at local call rates, unless legislation requires otherwise. For avoidance of doubt, calls cannot be charged at premium or international rates.
- The maximum time a customer contacting the helpdesk shall be required to wait before first contact with helpdesk staff shall be three (3) minutes.
- Provider shall ensure that helpdesk staff are trained and able to perform the remote maintenance process and to help resolve any possible issues without referring customer to other contacts.
- If the incident is deemed by the Provider to represent an immediate risk of loss or damage to life and / or property, then Provider shall initiate all procedures necessary to resolve the issue and prevent any possible damage to life or propriety.

Remote Maintenance Process: Provider shall develop and execute a process for remote maintenance, which shall be constructed based on assessment of the likely root causes and appropriate resolution methods for issues commonly encountered by customers during charging attempts and the operation of the EV charging post. Such process shall:

- Be in accordance with any training or instructions provided by the EV charging post equipment manufacturer.
- Include the process for remote resets and restarts of EV charging post.
- Include the process for passing on issues that Provider is not able to resolve, either to the EV charging post equipment manufacturer or to reactive maintenance activities; If the issue is passed by the Provider to the EV charging post equipment manufacturer, Provider shall pay the all fees levied by the EV charging post equipment manufacturer for the remote maintenance services they perform (unless covered by the warranty provided by the EV charging post equipment manufacturer) in such cases no fee shall be charged to customer in any case;
- Include the process for provision of feedback, updates and advice to the customer.
- Be completed, which means the issue has either been resolved or passed on to the EV charge post equipment manufacturer, within 4 hours of Provider first identifying an issue through remote monitoring, or receipt of the first call to the helpdesk about the issue, whichever is first.

Activation of the Reactive Maintenance activities: Provider shall provide reactive maintenance service for any issue or fault which relates to the EV charging post that Provider is not able to resolve within the remote maintenance process. Personnel dedicated for reactive maintenance service shall respond to any call and should be on site of EV charger post that is in fault in period of maximum 30 min if there is any danger to health and safety of customers or third persons or property. In other cases, reactive maintenance personal shall be on site in time period of 4 hours from the time issue has been passed to them.

Time periods specified for rectification of errors and specified in this chapter and chapter 3.1 can be changed if Provider and Authority come to such agreement.
In that case, Provider shall develop a detailed Issue resolving procedures in which he will specify in more detail procedures for different categories of errors or faults. Rectification periods should be in accordance with industry standards and should provide customers with high quality service. Any change to rectification services should not result in higher volume of customer complaints and if number of complaints rises in 6-month period after they have been amended then Provider shall

develop a revised Issue resolving procedures with new rectification periods and procedures with aim resolving customer complaints and achieving better overall customer satisfaction rate.

Provider shall provide 24/7 access to real-time data environment for nominated Contract Entity representatives for the purpose of observing current and historic performance and download of relevant data. Provider shall manage (add, edit, remove) access for nominated representatives on request from time to time, providing a process to apply appropriate user rights.

Provider shall, within X months of the effective date of the Contract (including retrospective data if services are provided to publicly available Charge post within such period), provide data in a format, frequency and mechanism specified by Contracting Entity. Provider shall respond constructively to requested changes and developments in relation to such from time to time.

Provider shall provide a daily status report on basic functions, including but not limited to, Charge post status, error Logs, charging performance and charge session success rate, through a format and channel to be agreed with Contracting Entity (e.g. emailed directly to Contracting Entity).

Provider shall provide the below monthly reports to Contracting Entity within 10 (ten) business days of the end of the respective calendar month. Additional information and analysis may be provided at Provider's discretion. The exact format of each report and method for provision shall be agreed by Provider and Contracting Entity from time to time.

- Charging Activity – for each charging sessions, provide charge post reference or identity number, location reference or identify number, kWhs, vehicle model, time of day, payment method, total transaction fees paid, duration of charge and total charging income received.
  - **ii)** Utilisation – actual time and kWhs delivered compared to maximum potential time and kWh delivery capacity, expressed per month
  - **iii)** Uptime percentage per Calendar Month – per charge post the actual percentage uptime which is defined as the number of minutes per month that the charge post is operationally and technically capable of being used to charge an EV, divided by the total number of minutes in the calendar month minus exceptional downtime.
  - **iv)** Downtime Analysis – assessment of the downtime which reveals how much downtime is exceptional downtime and describes the reasons for all downtime and exceptional downtime, with clear connection to the failure report.
  - **v)** Failures – per charge post the number of operational or technical failures including failed charges per month (meaning charge sessions initiated but not completed or terminated early) including the cause and duration of each failure to the extent that such information can be extracted from the charge post.
  - **vi)** Helpdesk calls – number received per charge post, per day, per issue type, average resolution time, number requiring resets or restarts of the charge post, number escalated to the charge post manufacturer for further remote maintenance, number escalated to the internal maintenance process
  - **vii)** Customer Feedback – consolidation of customer comments (positive and negative) regarding the charge post offer that have been received via the helpdesk or other means.
  - **viii)** Learning Log – recommendations of changes to be made (e.g. to processes, communication and design) to improve customer service and reliability and to reduce costs.

Integrated lamppost EV charging maintenance and management

Provider shall use all reasonable endeavours to co-operate fully with all equipment manufacturers and all third-party service providers included in provision of integrated lamppost EV charging service

to achieve the maximum levels of uptime (minimum levels of service failures) and successfully completed transactions possible for all charging posts operated under this Contract.

Provider shall ensure that customers paying for their use of the Charge posts using NFC enabled credit or debit cards or an ad hoc payment website accessed via a QR code pay exactly the price stated in the tariff and that such customers have the opportunity to request a receipt for their transaction.

Provider shall collect monies from payment parties which equals customers' payments to payment parties for the use of the charge posts. in the case of third-party MSPs, such monies shall be calculated in accordance with the roaming agreement between Provider and the third-party MSP. Monies collected from payment parties shall be known as "charging income".

Provider shall pay the charging income in accordance with the invoicing arrangements for payment of charging income as described in Contract.

Provider shall pay payment parties any transaction fees and other fees payable in relation to customer payments using NFC enabled credit or debit cards and pass such in accordance with the prices. For the avoidance of doubt, such fees shall not be netted off the charging income.

Provider shall act transparently in regard to any fees or mark-up that are charged by Provider on or in roaming tariffs towards third party MSPs, providing information in advance of any charges to be applied and total fees generated periodically.

Communication technologies maintenance

Provider shall show a proactive attitude in identifying and responding to issues that undermine UPTIME, and shall work in a collaborative manner with all equipment manufacturers and all third party service providers included in provision of communication technology service to ensure that sustainable solutions are implemented to address such issues.

Provider's specific contribution to achieving this shared target shall include:

- **Proactive Real Time Remote Monitoring:** Provider shall perform proactive remote monitoring of the street side antennas and initiate issue resolution in an appropriate and timely manner. Provider shall have an automatic monitoring system that will notify Provider if any error occurs and if communications service is unavailable at any post. Regardless of automatic monitoring system, Provider shall ensure alternative manly managed diagnostics check of street side antennas and their full functionality. Frequency of manly managed diagnostics and protocols for that task will be developed by Provider before beginning of service provision and will be regularly updated during the period of Contract if needed (if number of non-functional street side antennas rises).

- **Software Updates and Integration of Firmware Updates.** Firmware update means any change to the firmware of the street side antenna. Provider shall maintain their software and back-office connection to the street side antennas, updating as necessary to maintain agreed levels of service for customers. Such maintenance shall include appropriate testing and integration of any firmware update issued by the manufacturer of equipment to Provider. The process, including notice periods, timelines and responsibilities for such testing and integration shall be jointly agreed by Provider and the equipment manufacturers, and Provider shall develop such process in a manner that is practical for both Provider and the equipment manufacturers and maintains agreed service levels for Customers.

Telephone HELPDESK: Provider shall provide a telephone helpdesk service which is staffed 24 hours per day, 7 days per week in in local language and which customers may contact in the event they have issues during the operation of the communication technology.

- Calls to the helpdesk shall be charged at local call rates, unless legislation requires otherwise. For avoidance of doubt, calls cannot be charged at premium or international rates.
- The maximum time a customer contacting the helpdesk shall be required to wait before first contact with helpdesk staff shall be three (3) minutes.
- Provider shall ensure that helpdesk staff are trained and able to perform the remote maintenance process and to help resolve any possible issues without referring customer to other contacts.
- If the incident is deemed by the Provider to represent an immediate risk of loss or damage to life and / or property, then Provider shall initiate all procedures necessary to resolve the issue and prevent any possible damage to life or propriety.

Remote Maintenance Process: Provider shall develop and execute a process for remote maintenance, which shall be constructed based on assessment of the likely root causes and appropriate resolution methods for issues commonly encountered. Such process shall:

- Be in accordance with any training or instructions provided by the street side antenna equipment manufacturer.
- Include the process for remote resets and restarts of street side antennas.
- Include the process for passing on issues that Provider is not able to resolve, either to the street side antenna equipment manufacturer or to reactive maintenance activities; If the issue is passed by the Provider to the street side antenna equipment manufacturer, Provider shall pay the all fees levied by the street side antenna equipment manufacturer for the remote maintenance services they perform (unless covered by the warranty provided by the street side antenna equipment manufacturer)
- Include the process for provision of feedback, updates and advice to the customer.
- Be completed, which means the issue has either been resolved or passed on to the street side antenna equipment manufacturer, within 24 hours of Provider first identifying an issue through remote monitoring, or receipt of the first call to the helpdesk about the issue, whichever is first.

Activation of the Reactive Maintenance activities: Provider shall provide reactive maintenance service for any issue or fault which relates to the street side antenna that Provider is not able to resolve within the remote maintenance process. Personnel dedicated for reactive maintenance service shall respond to any call and should be on site of street side antenna that is in fault in period of maximum 60 min if there is any danger to health and safety of third persons or property. In other cases, reactive maintenance personal shall be on site in time period of 24 hours from the time issue has been passed to them.

Time periods specified for rectification of errors and specified in this chapter and chapter 3.1 can be changed if Provider and Authority come to such agreement.
In that case, Provider shall develop a detailed Issue resolving procedures in which he will specify in more detail procedures for different categories of errors or faults. Rectification periods should be in accordance with industry standards and should provide customers with high quality service. Any change to rectification services should not result in higher volume of customer complaints and if number of complaints rises in 6 month period after they have been amended then Provider shall develop a revised Issue resolving procedures with new rectification periods and procedures with aim resolving customer complaints and achieving better overall customer satisfaction rate.

Provider shall provide 24/7 access to real-time data environment for nominated Contract Entity representatives for the purpose of observing current and historic performance and download of relevant data. Provider shall manage (add, edit, remove) access for nominated representatives on request from time to time, providing a process to apply appropriate user rights.

Provider shall provide a monthly status report on basic functions, including but not limited to, street side antenna status, error Logs, network performance and transmission session success rate, through a format and channel to be agreed with Contracting Entity (e.g. emailed directly to Contracting Entity).

Provider shall use all reasonable endeavours to co-operate fully with all equipment manufacturers and all third party service providers included in provision of communication service to achieve the maximum levels of uptime (minimum levels of service failures operated under this Contract.

Smart City application maintenance

Provider shall show a proactive attitude in identifying and responding to issues that undermine UPTIME, and shall work in a collaborative manner with all equipment manufacturers and all third party service providers included in provision of environment sensor service to ensure that sustainable solutions are implemented to address such issues.

Provider's specific contribution to achieving this shared target shall include:

- **Proactive Real Time Remote Monitoring:** Provider shall perform proactive remote monitoring of the environment sensors and initiate issue resolution in an appropriate and timely manner. Provider shall have an automatic monitoring system that will notify Provider if any error occurs and if communications service is unavailable at any post. Regardless of automatic monitoring system, Provider shall ensure alternative manly managed diagnostics check of environment sensors and their full functionality. Frequency of manly managed diagnostics and protocols for that task will be developed by Provider before beginning of service provision and will be regularly updated during the period of Contract if needed (if number of non-functional environment sensors rises).

- **Software Updates and Integration of Firmware Updates.** Firmware update means any change to the firmware of the environment sensors. Provider shall maintain their software and back-office connection to the environment sensors, updating as necessary to maintain agreed levels of service for customers. Such maintenance shall include appropriate testing and integration of any firmware update issued by the manufacturer of equipment to Provider. The process, including notice periods, timelines and responsibilities for such testing and integration shall be jointly agreed by Provider and the equipment manufacturers, and Provider shall develop such process in a manner that is practical for both Provider and the equipment manufacturers and maintains agreed service levels for Customers.

Telephone HELPDESK: Provider shall provide a telephone helpdesk service which is staffed 24 hours per day, 7 days per week in in local language and which customers may contact in the event they have issues during the operation of the environment sensors.

- Calls to the helpdesk shall be charged at local call rates, unless legislation requires otherwise. For avoidance of doubt, calls cannot be charged at premium or international rates.

- The maximum time a customer contacting the helpdesk shall be required to wait before first contact with helpdesk staff shall be three (3) minutes.
- Provider shall ensure that helpdesk staff are trained and able to perform the remote maintenance process and to help resolve any possible issues without referring customer to other contacts.
- If the incident is deemed by the Provider to represent an immediate risk of loss or damage to life and / or property, then Provider shall initiate all procedures necessary to resolve the issue and prevent any possible damage to life or propriety.

Remote Maintenance Process: Provider shall develop and execute a process for remote maintenance, which shall be constructed based on assessment of the likely root causes and appropriate resolution methods for issues commonly encountered. Such process shall:

- Be in accordance with any training or instructions provided by the environment sensors equipment manufacturer.
- Include the process for remote resets and restarts of environment sensors.
- Include the process for passing on issues that Provider is not able to resolve, either to the environment sensors equipment manufacturer or to reactive maintenance activities; If the issue is passed by the Provider to the environment sensors equipment manufacturer, Provider shall pay the all fees levied by the environment sensors equipment manufacturer for the remote maintenance services they perform (unless covered by the warranty provided by the environment sensors equipment manufacturer)
- Include the process for provision of feedback, updates and advice to the customer.
- Be completed, which means the issue has either been resolved or passed on to the environment sensors equipment manufacturer, within 24 hours of Provider first identifying an issue through remote monitoring, or receipt of the first call to the helpdesk about the issue, whichever is first.

Activation of the Reactive Maintenance activities: Provider shall provide reactive maintenance service for any issue or fault which relates to the environment sensors that Provider is not able to resolve within the remote maintenance process. Personnel dedicated for reactive maintenance service shall respond to any call and should be on site of environment sensors that is in fault in period of maximum 60 min if there is any danger to health and safety of third persons or property. In other cases, reactive maintenance personal shall be on site in time period of 24 hours from the time issue has been passed to them.

Time periods specified for rectification of errors and specified in this chapter and chapter 3.1 can be changed if Provider and Authority come to such agreement.
In that case, Provider shall develop a detailed Issue resolving procedures in which he will specify in more detail procedures for different categories of errors or faults. Rectification periods should be in accordance with industry standards and should provide customers with high quality service. Any change to rectification services should not result in higher volume of customer complaints and if number of complaints rises in 6 month period after they have been amended then Provider shall develop a revised Issue resolving procedures with new rectification periods and procedures with aim resolving customer complaints and achieving better overall customer satisfaction rate.

Provider shall provide 24/7 access to real-time data environment for nominated Contract Entity representatives for the purpose of observing current and historic performance and download of relevant data. Provider shall manage (add, edit, remove) access for nominated representatives on request from time to time, providing a process to apply appropriate user rights.

Provider shall provide a monthly status report on basic functions, including but not limited to, environment sensors status, error Logs, network performance and transmission session success

rate, through a format and channel to be agreed with Contracting Entity (e.g. emailed directly to Contracting Entity).

Provider shall use all reasonable endeavours to co-operate fully with all equipment manufacturers and all third party service providers included in provision of environment sensors service to achieve the maximum levels of uptime (minimum levels of service failures operated under this Contract).

Requirements just before the expiry of the Energy Performance Contract

This chapter sets out the requirements related to the Final inspection of the public lighting system which will take place just before the Energy Performance Contract expiry and the transfer of ownership of the Measures for improving the energy efficiency of the Public Lighting System to the Contracting Entity.

Final inspection and testing of the Public Lighting System

In the moment of Contract expiry, the public lighting system must fulfil all requirements set out in this document. Therefore, the Contracting Entity will hire an independent expert to carry out a detailed inspection and testing of the entire Public Lighting System and determine its condition and technical functionality.

The Provider shall ensure that the Contracting Entity has the right to use (including the right to giving it for use to third legal entities and/or natural persons) the Management & Control Centre (MCC) (and all its improved versions and updates) which represents an integral part of the Measures for improving energy efficiency aimed at the further management of the Public Lighting System, i.e. the purpose for which it has been purchased and used.

The Provider shall also ensure that there are no hidden and/or abnormally high costs of maintenance and use of the aforementioned software or other computer programmes.

The Provider shall give the Contracting Entity a non-exclusive right to software use, unlimited in terms of content, time and space, without the right to its suspension and without the obligation to return it.

The MCC shall be an open-source software, i.e. the Contracting Entity shall have access to its original code and have the possibility of its free use, study, modification and improvement.

The Provider shall transfer the exclusive right to use the software used to deliver the services under this Contract without any fee payment obligation. At the date of expiry, as well as upon its termination, the Provider shall provide the Contracting Entity with software suitable for installation on the Contracting Entity’s computer in digital form with all data, software modules, archive, upgrades and all other functions and data that were in the software and/or at the software’s disposal for the duration of the Contract.

The Provider shall at its own expense ensure the MCC’s availability to the Contracting Entity within the period of 30 days after the Contract expiry in order for the Contracting Entity to have enough time to ensure the necessary infrastructure and other requirements for using the MCC, and shall provide the Contracting Entity with the necessary information and technical support.

A detailed inspection and testing of the public lighting system will be carried out to check its compliance with the Contracting Entity's requirements on the Contract expiry date.
This means that the public lighting system must meet all of the guaranteed standards of service and any other technical requirements set out herein, in particular:

- Anti-corrosion protection functioning (no traces of corrosion on the luminaire);
- IP and IK protection level must comply with the requirements set out herein (the protective cover seal testing, etc.);
- Installed power of the Public Lighting System must be smaller than or equal to the Guaranteed installed active power.

If any of the specified service standards is not met at the time of detailed inspection and testing, the Provider shall take all necessary steps to ensure the compliance of the public lighting system with the above standards of service. The costs related to correcting the identified deficiencies of the parts, elements and equipment installed under the Measures for improving energy efficiency of the Public Lighting System shall be borne by the Provider.

A detailed inspection needs to be carried out 6 (six) months before Contract expiry. The detailed inspection and testing shall be carried out by an independent expert hired by the Contracting Entity. The costs of engaging an independent expert shall be borne by the Contracting Entity. An independent expert is a legal person with the technical and technological capacity to carry out all planned inspection activities, with relevant references and necessary authorisations and licenses. The Provider's and Contracting Entity's Authorised Representatives shall also have the right to be present at the detailed inspection. During the inspection, the Provider's and Contracting Entity's Authorised Representatives shall have the right to present their remarks, comments or objections in relation to the manner of execution of the inspection and/or the conclusions of the independent expert. The independent expert will list all such comments and/or objections in the Minutes on the performed final audit (Annex 5 to the Energy Performance Contract, Report Content, ZP - 19).

The independent expert will be required to draw up a draft of the Minutes on the performed final audit within 30 (thirty) days of the detailed inspection and deliver it to the Contracting Entity and the Provider both in written and electronic form.

Should they not agree with the content and conclusions of the proposed Minutes on the performed final audit, the Contracting Entity and the Provider have 15 days of the day of its receipt to make observations thereon in writing to the other contracting party and the independent expert. The independent expert shall have 15 days of the day of receipt of the Provider's and/or Contracting Entity's observations to accept or reject the objections of the dissatisfied contracting party.

Should the Independent expert accept the contracting parties' objections, he/she shall draft the final Minutes on the performed final audit within 15 days of the day of expiry of the term for submission of feedback to the Provider's and/or Contracting Entity's observations and deliver it to the contracting parties. Should the independent expert not accept the contracting parties' objections or there are no objections presented within the deadline defined by this Article, the submitted proposed Minutes on the performed final audit shall be the final Minutes on the performed final audit. Should the contracting parties be dissatisfied with the final Minutes (ZP - 19), the dispute shall be resolved in accordance with the provisions of the Energy Performance Contract (Dispute resolution).

If the inspection of the Public Lighting System carried out by the independent expert, the Provider and the Contracting Entity reveals irregularities and deficiencies of the parts, elements and equipment installed under the Measures for improving energy deficiency of the Public Lighting System, and if they are indicated in the Minutes on the performed final audit, the Provider shall rectify them immediately and carry out all required works and activities by the date of the Contract expiry to ensure that the elements, parts and equipment installed under the Measures for improving energy deficiency of the Public Lighting System are technically correct and fully functional, and in compliance with the lighting quality and energy efficiency standards and requirements set out in this Contract.

After the Provider rectifies all deficiencies indicated in the final Minutes on the performed final audit and ensures compliance with all requirements (especially the requirements related to lighting quality and energy efficiency), it shall inform the Provider and the independent expert thereon in writing. The Contracting Entity, the Provider and the independent expert shall perform a second inspection of the Public Lighting System in order to ascertain whether the Provider has rectified all deficiencies. If the second inspection of the Public Lighting System shows that the Provider has performed all necessary

activities and repairs, the independent expert shall issue a written statement on the full functionality of the Public Lighting System and deliver it to the Contracting Entity and the Provider.

The Provider shall carry out the above activities as soon as possible and no later than 2 (two) months before the Contract expiry. However, if the identified deficiencies pose a hazard to the safe operation of vehicle and pedestrian traffic, they must be remedied within three days from the date of receipt of the independent expert's written notice.
If the additional inspection shows that the Provider has failed to do this, i.e. that it has not obtained a written certificate of full functional capability of the Public Lighting System at least 1 (one) month before the Contract expiry, the Contracting Entity shall be entitled to activate available fee payment mechanisms.

The activity workflow for the Final inspection of the Public Lighting System is provided in the image below (Image 5).

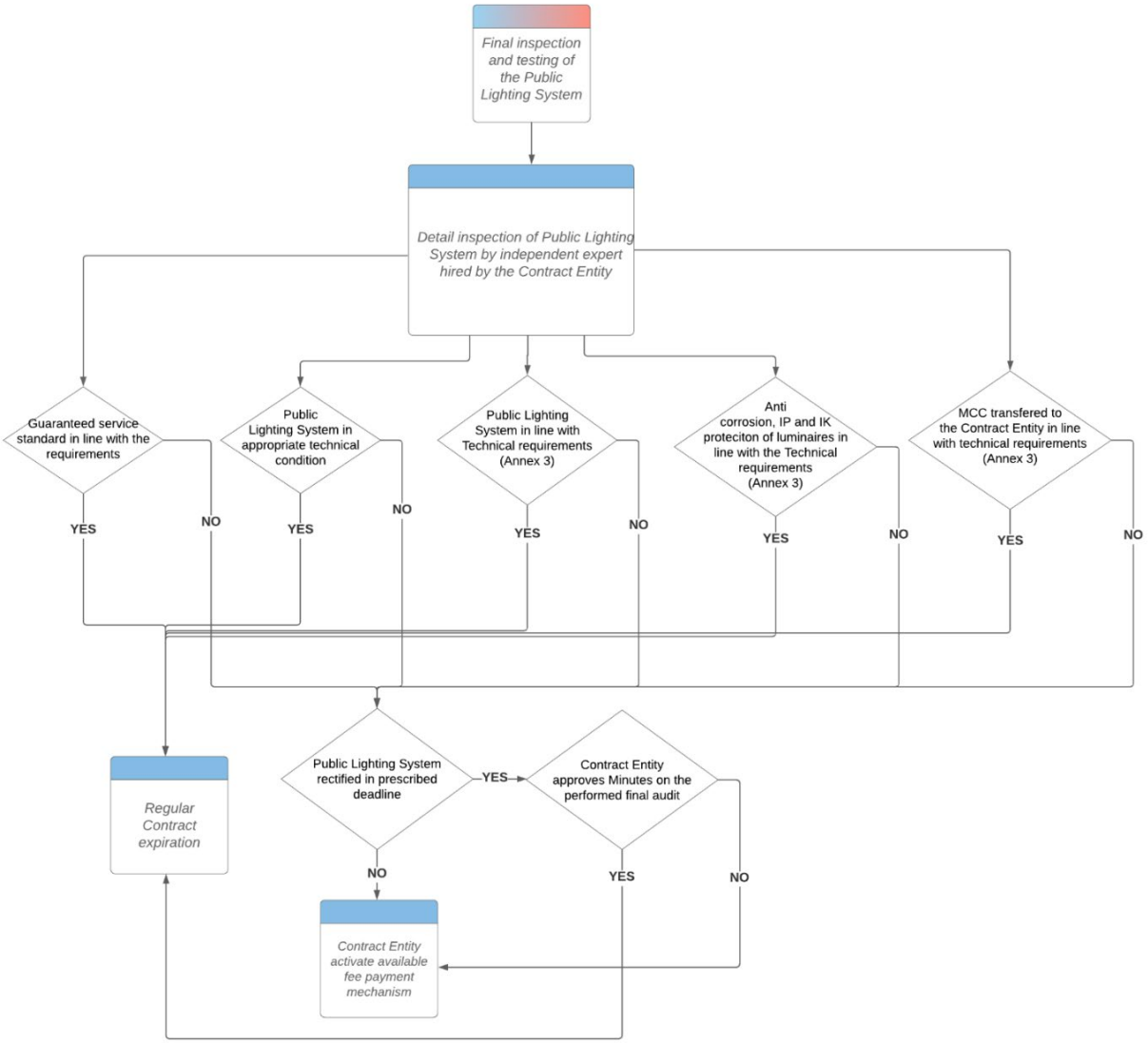

Image 6 Workflow during the Final inspection of the Public Lighting System

Detailed Maintenance Plan

The Provider shall, no later than two months before the end of the contractual period, provide a detailed description of the necessary and planned maintenance activities together with a list of spare parts and the details about their service life, a maintenance record during the Contract term, and plans and procedures in case of accidents or discontinuation of the lighting service.

The Public Lighting System maintenance must be planned in accordance with the technical specifications of the equipment, the manufacturer's instructions and good maintenance practice. The planned maintenance of each element of the public lighting system must be given in a table and described textually. The table must include the number of elements concerned as well as the predicted frequency of maintenance expressed in terms of a time unit (hour/day/month/year). The textual description of each element of the public lighting system must include a description of the activities and the minimum technical properties of the materials needed to perform the maintenance in accordance with the technical specifications of the equipment, the manufacturer's instructions and good maintenance practice. The Detailed Maintenance Plan must contain the total cost of the Public Lighting System estimated on the basis of the planned maintenance activities and service life of the equipment.

The maintenance plan must contain any relevant user manuals, technical information, and any upgrades or revisions of the software used (if any). The maintenance plan must be in _____ language.

(Contracting Entity)

Energy Performance Contract
Annex 4 Monitoring, Measurement, Verification Plan

Client to add monitoring and measurement protocols for additional non-energy services if needed.

Contents

Glossary

Accredited laboratory means a laboratory with a certificate of competence in accordance with the standard on which basis the laboratory has been accredited by the national accreditation body in accordance with the Regulation (EC) no 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/93;
Installed active power of the luminaire means the active electrical power of the luminaire which includes all luminaire power losses (lighting source, luminaire control gear) in all dimming regimes, excluding the feeder line losses as well as the sensor and/or actuator power;
Measured installed active power of the luminaire means the active power of the luminaire measured by appropriate instruments according to the procedure defined by this M&V plan;
Measured installed active power of the public lighting system means the sum of measured installed active power of the luminaire excluding the non-functioning luminaires;
Normed power of the luminaire means the active power of the luminaire that includes luminaire losses (lighting source, luminaire control gear) in the dimming regime in which the luminaire meets the lighting quality requirements set out by this annex. The prescribed normed power dimming regime is set to 100%.
Maximum allowed normed active power of the Public Lighting System is the maximum allowed total normed active power of all luminaires in the scope of implementation of the Measures for improving energy efficiency of the Public Lighting System after the implementation of the Measures for improving energy efficiency of the Public Lighting System, defined by the Contracting Entity within the tender documentation.
Monitoring, measurement and verification plan (M&V) Plan means the monitoring, measurement and verification plan of energy savings defined as mandatory by the Energy Performance Contract and in accordance with the requirements referred to in the Regulation on contracting and implementation of energy services in the public sector (Official Gazette no 11/15);
Measures for improving energy efficiency of the Public Lighting System (Measures) mean all activities regularly leading to verifiable and measurable or estimable improvement of energy efficiency, i.e. to reduced energy consumption. The Measures represent all services (financing, designing, drafting of as-built project, energy audits etc.), reconstruction and/or modernisation works, installation works, parts, elements, equipment and software used by the Provider for the reconstruction and/or modernisation of the Public Lightning System aimed at the improvement of energy efficiency of the Public Lightning System, i.e. energy service provision in accordance with the provisions of this Contract;
Standard of service means standards which are the subject of monitoring, measurements and verification with aim to verify the quality of services performed and regard the functionality, energy savings and lighting quality requirements.
Basic period means the period before application of the Measures;
Reference normed active power of the public lighting system or Reference installed active power of the public lighting system means the actual installed active power of the existing public lightning system defined by the Annex 1 Project Scope and it equals to the sum of Reference normed active power of all luminaries. It is expressed in kilowatts (kW) rounded at two decimal places;
Reference normed active power of the luminaries or Reference installed active power of the luminaries (reference power before measures for improving energy efficiency) means the

installed active power of the existing luminaries comprising luminaire losses (lighting source, luminaire control gear) in normed dimming regime (100 %) but not including line losses. It is expressed in kilowatts (kW) rounded at two decimal places;

Reduced installed power (guaranteed savings for the normed active power) means the difference between reference normed active power of the public lighting system and normed active power of the public lighting system after the implementation of the Measures for improving energy efficiency;

Public Lighting System means the part of the Contracting Entity's overall public lighting system consisting of the parts, facilities, installations, equipment and elements used for lighting of public areas and roads owned by the Contracting Entity which will be the object of implementation of the Measures for improving energy efficiency specified by the Project Scope (Annex 1 to the Contract).

Guaranteed installed active power of the Public Lighting System represents the sum of the Guaranteed installed active powers of all luminaires in the Public Lighting System within the scope of implementation of the Measures for improving energy efficiency of the Public Lighting System after the implementation of the Measures for improving energy efficiency of the Public Lighting System and it changes depending on the Dimming regime of each luminaire as defined by the Contracting Entity ;

Guaranteed installed active power of the luminaire is the product of the Guaranteed normed active power of the luminaire and the Dimming regime of the luminaire expressed as a percentage and it is the sum of all Guaranteed installed powers of the luminaires within the scope of implementation of the Measures for improving energy efficiency of the Public Lighting System equal to the Guaranteed installed active power of the Public Lighting System;

Guaranteed normed active power of the Public Lighting System is the sum of the Guaranteed normed active powers of all luminaires within the scope of implementation of the Measures for improving energy efficiency of the Public Lighting System after the implementation of the Measures for improving energy efficiency of the Public Lighting System. The guaranteed normed active power of the Public Lighting System is defined by the Tender, i.e. by the annex Fee Payment Plan and Savings Plan (Annex 8 to the Contract);

Guaranteed normed active power of the luminaire is the power of the luminaire where the luminaire meets the lighting quality requirements set out by Technical Requirements (Annex 3 of the Energy Performance Contract), which includes the power of the luminaire and all luminaire losses (lighting source, luminaire control gear) and which is increased by the savings achieved in the Designing Period in relation to the Tender based on the instructions stated in Technical Requirements (Annex 3 to the Energy Performance Contract);

Guaranteed standards of service refer to the Guaranteed installed active power of the Public Lighting System, the Guaranteed lighting quality standard and the Guaranteed functionality of parts, elements and equipment;

Guaranteed lighting quality standard mean the part of the Guaranteed standard of service regarding the guaranteed lighting requirements in accordance with the characteristic profiles of illuminated areas

Guaranteed functionality is part of the Guaranteed standard of service relating to the guarantee of functionality of parts, elements and equipment which is subject of the Measures for improving energy efficiency of the Public Lighting System;

1 Description and subject of the measures for the improvement of the energy efficiency of the public lighting system

The goal of implementing the Measures for improving energy efficiency of the public lighting system (hereinafter referred to as: Measures) is the modernisation and/or reconstruction of the public lighting system along with the increase in energy efficiency, i.e. achieving energy and financial savings in operative costs in compliance with the defined minimum standards of service.

Achieving energy and financial savings is the result of the reduced normed active power of the Public lighting system in the scope of the implementation of the Measures, as well as the additional power regulation through the possibility of changing the luminaire dimming regime. The scope of the implementation of the Measures is defined by the Project Scope (Annex 1 to the Energy Performance Contract).

The process of the method of measuring values and the process for reliable determination of standards of service realised by implementation of Measures is defined by the Monitoring, Measurement and Verification Plan (hereinafter referred to as: Plan M&V). The standards of service within this M&V Plan include the functionality of parts, elements and equipment installed within the implementation of Measures, the Guaranteed installed active power of the Public Lighting System and the Guaranteed lighting quality standard.

The energy savings shall be determined by measuring the installed active power of luminaries within the scope of implementation of Measures, i.e. installed active power of the Public Lightning System which represents the sum of measured installed active power of all luminaries within the scope of Measures. The achievement of the standard of service shall be determined by measuring the lighting quality parameters, by visual inspection of the functionality of parts, elements and equipment and by automated control supported by the Management and Control Centre.

A description of the Measures with basic parameters is shown below (Table 1).

Table 18 List of implemented Measures for improving energy efficiency of the Public lighting system

Ordinal number	Measure	Description	Reference installed power of the Public lighting system before the implementation of the Measures (kW) A	Maximum permitted normed active power of the Public Lighting System (kW) B	Guaranteed normed active power of the Public Lighting System in accordance with the Provider's offer (kW) C
1	Reconstruction and/or modernisation of the public lighting system	Scope of the project in accordance to the EPC Contract - Annex 1	Annex 8, Reference data sheet, cell D7	Annex 8, Reference data sheet, cell D12	Annex 8, input dataTenderer sheet, cell D8

Every representation of power in Plan M&V, as well as the annexes to Plan M&V (Reports which the Provider shall be obliged to present during the Use period) should be expressed in

kilowatts (kW) and rounded at two decimals, apart from the powers of single luminaire that should be expressed in watts and rounded up or down to a whole number. Every representation of lighting and technical parameters should be rounded at two decimals.

The note about equivalence is applicable to all of the standards specified in this Annex.

2 IPMVP option and measurement threshold

This M&V Plan was drawn up in accordance with the Ordinance on the System for Monitoring, Measuring and Verifying Energy Savings (Official Gazette 71/15) and IPMVP, Volume I, EVO10000-1:2014 *International Performance Measurement and Verification Protocol*, in Croatian: Međunarodni protokol za mjerenje i verifikaciju učinka).

IPMVP Option used to determine savings:
Option A - - the installed active power of the luminaires expressed in watts (W) is a key parameter.

Justifying the chosen Option:
The chosen option was the option for measuring key performance parameters, which define the energy consumption of the public lighting system while maintaining the defined minimal standards of service. The energy service provider guarantees the Guaranteed installed active power of the Public Lighting System while the Contracting Entity takes the risk of modification of number of working hours and/or dimming regime of the Public Lighting System and the modification of the electricity unit price.

Measurement threshold:
The public lighting luminaire is the measurement threshold, while the LED module and the driver circuit of the luminaire are the isolated area.

3 Reference installed active power of the Public Lighting System

The Reference installed active power of the Public Lightning System is defined by the Reference Condition (Annex 2 to the Energy Performance Contract) and by the Payment Plan and Savings Plan (Annex 8 to the Energy Performance Contract). Reference installed active power of the Public Lighting System before implementation of Measures is equal to Reference normed active power of Public Lighting System.

4 Guaranteed standards of service

The Guaranteed service standards in the public lighting system define the minimum requirements for availability, quality and energy savings of the public lighting system. The Guaranteed standards of service relate to:

- functionality of parts, elements and equipment installed within the scope of implementation of Measures;
- guaranteed installed active power of the Public Lighting System, i.e. the sum of the Guaranteed installed active power of all luminaires of the Public Lighting System;
- guaranteed lighting quality conditions.

The Minimum requirements for the Guaranteed standard of service are given in the Technical Requirements (Annex 3 to the Energy Performance Contract). The Guaranteed standards of service are standards which the Provider submitted as part of the Tender, planned as part of the Design documentation and which it shall maintain throughout the contractual period. In the event of non-compliance with only one of the three guaranteed standards of service, the contracted service will be deemed as not having been delivered and, accordingly, the Contracting entity shall have the right to suspend or reduce the payment of the Fee in accordance with the Contract.

5 Responsibilities and dynamics of monitoring, measuring and verification

According to this M&V plan, the monitoring, measurement and verification begins with the acceptance of the Public Lighting System (acceptance of Minutes on the executed works of reconstruction and/or modernisation) and lasts throughout the entire period of use, until the expiry of the Contract. For the purpose of monitoring, measuring and verifying the achievement of the defined standards of service after the implementation of the Measures, the Contracting Entity will monitor, measure and verify the standards of service and compliance with the technical requirements of the Contracting Entity with the following dynamic:

- Continuous dynamic monitoring, measuring and verification;
- Monitoring, measuring and verification at the request of the Contracting Entity.

Monitoring, measuring and verification of all parameters are the responsibility of the Contracting Entity. The Provider has to be allowed unobstructed access, insight into the measurement protocols and measurement results.

5.1 Continuous monitoring, measuring and verification through the MCC

In accordance with the Technical Requirements (Annex 3 to the Energy Performance Contract), the Contracting Entity requests that the technical solution for remote monitoring, measuring and verification of certain parameters from each individual luminaire are implemented as part of the implementation of Measures. This makes it possible to monitor the enforcement of a portion of the Guaranteed standards of service in real time. The Management and Control Centre, according to the collected data from each individual luminaire must create reports which shows the Contracting Entity and the Provider all of the relevant data regarding the Fee Adjustment.

The parameters which are monitored, measured and verified through the Management and Control Centre are as follows:

- **installed active power of the luminaire (Guaranteed Installed Active Power of the luminaire);**
- **installed active power of the Public Lighting System (Guaranteed installed active power of the Public Lighting System);**
- **information on luminaire and communications equipment availability (part of the Guaranteed Functionality)**
- **information on Management and Control Centre and communication network availability (part of the Guaranteed functionality).**

In order to make it possible for the Provider and Contracting Entity to rectify defects early (exceeding the Guaranteed Installed Active Power, malfunction and similar), the Management and Control Centre will alert the Provider and Contracting Entity in real time and provide relevant information on the unavailable sections of the Public Lighting System (luminaries, elements or equipment) or luminaires where the measured active power of the luminaires is not in accordance with the Guaranteed installed active power of the luminaire, all in compliance with the Technical Requirements (Annex 3 to the Energy Performance Contract).

A detailed description of the calculation procedure and drafting of the Report on Fee Adjustment is provided in the chapters below.

5.2 Inspection, measurement and verification at the request of the Contracting Entity

The Contracting Entity has the right to carry out an inspection, measurement and verification of all parameters of the Guaranteed Standards of Service throughout the contractual period. The inspection, measurement and verification at the request of the Contracting Entity may be carried out at any moment throughout the contractual period at the Contracting Entity's request. The purpose of the inspection, measurement and verification at the request of the Contracting Entity is to identify non-compliance with the Guaranteed Standards of Service which are not verified through the Management and Control Centre or when the data verified via the Management and Control Centre is in doubt.

If the inspection, measurement and verification at the request of the Contracting Entity shows that the Guaranteed standards of service have not been achieved, the Provider bears the cost of the inspection, measurement and verification at the request of the Contracting Entity. In the event that inspection, measurement and verification at the request of the Contracting Entity shows that the Guaranteed standards of service have been fulfilled, the cost of their implementation will be borne by the Contracting Entity.

The Contracting Entity has the right to perform a random inspection, measurement and verification of standards of service that are tracked through continuous monitoring, measurements and verification by the Management and Control Centre, as well as review, measure and verify standards of service that are not monitored through the Management and Control Centre. In the event of for the inspection, measurement and verification at the request of the Contracting Entity, the Contracting Entity is obligated to inform the Provider in writing of the time and date when the inspection and testing at the request of the Contracting Entity will be conducted, at least 48 hours prior to its perform. During the inspection, measurement and verification the Contracting Entity must ensure unhindered access to the Provider's representative.

The Contracting Entity shall for the purpose of monitoring, measurements and verification provide a Test field where the Guaranteed standards of service shall be tested. The Test field shall include a maximum of 50 public lighting poles, i.e. a maximum of 50 luminaires.

The Contracting Entity has the right to perform light quality measurements, measurements of the installed active power of the luminaires on the Test field or the luminaire location, along with any other measurements for testing compliance with the Technical Requirements (Annex 3 to the Energy Performance Contract) and the values recorded by the Management and Control Centre. If any of the measurements show that the luminaire is not in compliance with the Tender and/or the Technical Requirements (Annex 3 to the Energy Performance Contract), the luminaire is declared non-functional.

In the event of activation of the Contracting Entity's rights to perform measurement in the Test field, the Contracting Entity shall no later than 96 hours before removing the luminaire notify the Provider and send the exact location of the luminaires which are to be removed and relocated to the Test field. **The Provider shall deliver replacement luminaires to the Contracting Entity's address within the next 96 hours for the locations which the Contracting Entity will take the luminaires from for measurements on the Test field.** The Contracting Entity shall install the replacement luminaires at the location where the luminaires being measured on the Test field are removed from. The replacement luminaire types must meet the Contracting Entity's requirements stated in the Technical Requirements (Annex 3 to the Contract) and the Tender (Annex 6 to the Contract).

If the measurements on the Test field show that the luminaires are in compliance with the Contracting Entity's requirements, the Contracting Entity shall return the luminaires from the Test field to their primary location and return the replacement luminaires to the Provider at its own expense. All the incurred costs (excluding the cost of delivery of replacement luminaires to the Contracting Entity’s address) shall in this case be borne by the Contracting Entity.

If the measurements show that the luminaires do not meet the Guaranteed Standards of Service and/or Technical Requirements (Annex 3 to the Contract), the luminaires in question will be declared as non-functional. In the event that any luminaire is declared non-functional at the Test field, the non-functional luminaires shall be returned to the Provider and the Contracting Entity shall keep the replacement luminaires installed at the location where the non-functional luminaires were taken from. In the event mentioned in this paragraph, all consequent costs of removing and installing the non-functional and replacement luminaires as well as the measuring costs and other handling costs shall be borne by the Provider.

If the measurements at the location of the luminaire or the Test field show that the measured values are different from the values recorded by the Management and Control Centre, it shall be considered that the recording of dynamic data about the public lighting system is non-functional and the luminaire shall be declared non-functional.

6 Monitoring, measuring and verifying guaranteed standards of service procedure

6.1 Functionality of equipment and elements

The functionality of equipment and elements refers to determining whether all parts of the Measures for improving energy efficiency fulfil their task. The functionality of equipment and elements, regarding functional units, is divided into two basic parts: luminaires and communication module for sending information (A) and the Management and Control Centre and the network for data transfer (B).

The Contracting Entity is responsible for the functional inspection of equipment and elements of the Public Lighting System throughout the contractual period. Part of the functionality monitoring is carried out automatically through the Management and Control Centre, while the Contracting Entity independently controls the rest of the functionality in the field and/or at the Test Field.

The recording of detected non-functional luminaires and other non-functional equipment, installed as part of the implementation of the Measures, and recording of deadlines in which the malfunctions have been remedied will be made through the Management and Control Centre. If the luminaries or other equipment is non-functional at any time during the Contractual Period, the Management and Control Centre will alert the Provider and the Contracting Entity and provide information on the position of the luminaire or equipment which is non-functional. The alert is executed in real time and it is deemed that the Provider and Contracting Entity are aware of the malfunction upon its transmission. If the luminaire malfunction is recorded by control in the field, the Contracting Entity shall activate the alarm manually. If the malfunction is not remedied within the Contractual Deadline, the Contracting Entity will calculate the fee reduction through the Management and Control Centre up until the moment the Provider remedies the malfunction and the Contracting Entity confirms that the malfunction is repaired.

6.1.1 Functionality of the luminaire

The functionality of the luminaire refers to determining whether the luminaire meets the Contracting Entity's Technical requirements (Annex 3 to the Contract). A luminaire is considered to be non-functional in the following cases:

- The luminaire does not emit light;
- The luminaire is not correctly positioned at the pole;
- The luminaire does not read and/or send the read data or the sent data is wrong;
- The luminaire's arm is not of appropriate length;
- The luminaire does not comply with the Contracting Entity's technical requirements (Annex 3 to the Contract);
- The active power of the luminaire changed for more than 5% from the previously measured power without changing the luminaire dimming regime;
- If the luminaire is not functional for a shorter period of time and then, with no Provider intervention, it independently begins to function again (e.g. flickering, irregular submission of read data etc.);
- The dimming regime of the luminaire does not comply with the prescribed dimming regime;
- Errors in the communication module of the luminaire (does not read/send necessary data, does not respond to data sent from the Management and Control Centre etc.).

The functionality of the luminaire is monitored through the Management and Control Centre, by field measurements and observations. If at any moment of the term of the Contract, the Contracting Entity shows doubt in the compliance with the technical requirements stated in Annex 3 to the Energy Performance Contract, it has the right to request the testing of the luminaire in question:

- in an appropriate laboratory according to the laboratory selection criteria in accordance with annex 3 and this annex to the Energy Performance Contract, i.e. to remove the luminaire from the installation location; or
- at the luminaire location;
- at the Contracting Entity's Test field.

The Management and Control Centre shall receive a notification regarding the public lighting system switching on through the ripple control receiver. If the luminaire functioning is not registered in the Management and Control Centre within 30 minutes of registering the switching on of the public lighting system, the luminaire shall be considered non-functional.

All costs related to sending and testing the luminaires in an appropriate laboratory shall be borne by the Contracting Entity, apart from the case when the tests show that the luminaire does not comply with the Contracting Entity's requirements stated in this annex and Annex 3 to the Energy Performance Contract.

If the inspection conducted by the Contracting Entity confirms that the luminaire does not emit sufficient light or that the technical requirements have not been met in accordance with the Annex 3 to the Energy Performance Contract, the luminaire is deemed to be non-functional. In this event the Provider bears the total cost of the handling, measurement and inspection. The Provider is obligated to replace all of the equipment, elements and/or luminaires which have been installed, but are not functional, with new, properly functioning equipment with equivalent or better properties. If the non-functional equipment is not replaced in the specified deadline, the Contracting Entity will reduce the fee in accordance with the provisions of the Contract.

The fee adjustment shall not be calculated for non-functional luminaires for the standard of service which includes Guaranteed installed active power of the Public Lighting System. While calculating the active power of the Public Lighting System, for all non-functional luminaires shall be assumed that the measured power of non-funcional luminaires equals the Guaranteed installed active power of that luminaire.

6.1.2 Functionality of the Management and Control Centre

The functionality of the Management and Control Centre is manifested in the ability to use all of the program features in accordance with the Contracting Entity's requirements as specified in the Technical Requirements (Annex 3 to the Contract). The functionality of the Management and Control Centre means the functionality of all application modules of the Management and Control Centre as well as the functionality of the communication between the Management and Control Centre and the communication module (luminaire). If the Management and Control Centre loses connection to more than 2% of the luminaires within the scope of implementation of the Measures for improving energy efficiency, the Management and Control Centre shall be considered non-functional.

The Contracting Entity will record the non-functionality of the Management and Control Centre automatically through the Management and Control Centre or when that is not possible, due to the unavailability of the Management and Control Centre, manually and in writing via email.

6.2 Guaranteed Installed Active Power

Monitoring, measurements and verification of the Guaranteed installed active power of the luminaires and the Public lighting system shall be done automatically through the MCC. The MCC shall in defined time intervals record the active power of the luminaire and compare it to the Guaranteed installed active power of the luminaire in accordance with the luminaire dimming regime. At the end of the calculation period, in accordance with the measured (recorded) data from the luminaire and the data from the Design documentation, the Tender and the current price of electric energy, the MCC shall make automatic Fee adjustment the Public Lighting System basis.

Considering that the MCC measures the active power of a particular luminaire and that the intervals of measurement are known, the fee adjustment shall be done in accordance with the difference between the Guaranteed installed active power of the luminaire and the measured active power of the luminaire multiplied by the number of working hours of the luminaire since the previous measurement (interval of measurement). Considering the above mentioned, the MCC must calculate the amount of energy consumption for every luminaire and compare it to the energy consumption in case that the active power of the luminaire equals the Guaranteed installed active power of the luminaire. The above mentioned consumption multiplied by the actual price of electrical energy shall equal the fee adjustment.

Only installed active power of the Public Lighting System which is equal to or lower than what has been specified in the Contract is permitted. (Table 2).

Table 19 Instruction for measuring the installed active power of the luminaire

Size	Code	Model	Sample	Tolerance margin
Guaranteed installed active power of the Public Lighting System	P	Remote measuring and recording through the MCC	All luminaries within the scope of the Measurement implementation	None

6.3 Guaranteed lighting quality conditions

Guaranteed lighting quality conditions refer to meeting lighting quality requirements defined within the standard HRN EN 13 201-2:2016, legislation and Public Lighting Plan and guaranteed with the Tender and Design Documentation.

The monitoring, measuring and verification of the guaranteed lighting quality conditions is the Contracting Entity's responsibility. Throughout the contractual period the Contracting Entity will monitor, measure and verify lighting quality conditions and verify compliance with the Guaranteed Standard of Service. The lighting quality conditions will be checked at the Test Field under the Contracting Entity’s responsibility as well as at random locations within the scope of implementation of Measures for the improvement of energy efficiency. The Test Field will correspond to the characteristic profiles and lighting conditions defined in the Design Documentation. If the conducted lighting quality measurements at random locations within the scope of the Measures reveal that some of the parameters defined by the HRN EN 13 201-2:2016 standard are not met or if the measurements show that the luminaire does not emit sufficient light, or that the guaranteed lighting quality conditions have not been met, the luminaire will be deemed as non-functional (Table 3).

The Contracting Entity is entitled to exclude the luminaires from the installation site and conduct testing at the location or at the Test Field at any time. The Contracting Entity bears all expenses in relation to the testing of luminaires. If the testing shows that the luminaire does not meet the requirements set by the Contracting Entity, the measuring costs shall be borne by the Provider. During the testing the Contracting Entity must ensure unhindered access to the Provider's representative.

Table 20 Instructions for measuring light-technical parameters

ROAD LIGHTING (M lighting class)			
Parameter name	**Code**	**Measurement unit**	**Tolerance margin**
Average illuminance	L	Cd m^2	Equal or higher
Overall uniformity	U_0	-	Equal or higher
Longitudinal uniformity	U_l	-	Equal or higher
Threshold increment TI	f_{TI}	-	Equal or lower
Edge illuminance ratio	R_{EI}	-	Equal or higher
PEDESTRIAN LIGHTING (P lighting class)			
Parameter name	**Code**	**Measurement unit**	**Equivalence criteria**
Average luminance	E	lx	Equal or higher
Minimal luminance	E_{min},	lx	Equal or higher than minimal luminance is permitted, while luminance which is at most 10% less than minimal luminance is permitted.

7 Fee adjustment

The fee for the provided service will be adjusted to the level of delivered standards of service. The level of delivered standards is verified in accordance with the procedure defined in this Annex. If it is established that the Guaranteed Standards of Service have not been met and if the Provider does not remedy those deviations within the deadline specified in the Contract, the fee for the provided service will be reduced. If it is determined that the Provider is achieving a better standard of service from the guaranteed , regarding the installed active power and the luminaire, the fee for the provided service will be increased.

The fee is adjusted according to the following formula

N = PN – UE – UN - UUNC

Whereas:

N = Fee payable to the Provider, VAT included;

PN = Offered Fee indicated in the Tender (Annex 6 to the Contract) and the Payment Plan and Savings Plan (Annex 8 to the Contract), VAT included (VAT valid in the period for which the invoice is issued);

UE = adjustment in line with the measurement of energy efficiency standards;

UN = decrease due to deficiencies;

UUNC = decrease due to MCC malfunction or unavailability.

7.1 Reduction due to the measurement of energy efficiency standard (UE)

For the whole term of the Contract a fee adjustment shall be performed, considering the difference between the measured active power of the Public Lighting System and the Guaranteed installed active power of the Public Lighting System, i.e. the luminaire consumption.

If the active power of the luminaire is greater than the Guaranteed Active Power of the Luminaire, the fee will be reduced according to the difference of the active power of the luminaire. Considering that the measurements are performed in specified and known intervals, the fee shall be reduced in accordance with the product of the time intervals in hours (15 minutes, i.e. 0.25 hours), the difference between the measured power of the luminaires and the Guaranteed installed active power and the current unit price of electrical energy. The Contracting Entity has the right to change the time intervals in which the measuring shall be done, not shorter than 15 minutes. If the difference between the measured power of the luminaire and the Guaranteed installed active power of the luminaire is negative, the fee shall be increased according to the same principle.

The fee adjustment is done at the end of the calculation period on the Public Lighting System basis, i.e. the difference for each luminaire is summed up for all functional luminaires in order to determine the adjustment for the whole Public Lighting System. All fee adjustment calculations during the measuring of energy efficiency standards shall be done **through the MCC which shall have the ability to create a Report on the installed active power of luminaire.** The fee reduction calculation is conducted on the basis of the Report on the Installed Active Power of the Luminaires created through the MCC and approved by the Contracting Entity in accordance with the Contract.

The fee adjustment during the measuring of energy efficiency standards is not performed for non-functional luminaires.

7.2 Reduction due to Deficiencies (UN)

Reduction due to deficiencies refers to the non-functionality of a luminaire. The luminaire is non-functional if it is below the required standards defined by this annex and the Technical requirements (Annex 3 to the Energy Performance Contract). The Contracting Entity within the Technical Requirements (Annex 3 to the Energy Performance Contract) defined the maximum allowed deadlines for the replacement of non-functional luminaires within the scope of implementation of the Measures. The deadline for the replacement of the non-functional luminaires starts at the moment when the malfunction is recorded. After the rectification of the malfunction, the Provider is obliged to notify the Contracting Entity thereof through the Management and Control Centre. The malfunction rectification deadline is suspended after the Provider has sent the information that the malfunction has been rectified, but the malfunction is deemed to be rectified only after the Contracting Entity's confirmation. If the Contracting Entity refuses to issue a confirmation that the malfunction has been rectified, the rectification deadline continues from the moment when the Provider sent the information that the malfunction was rectified (i.e. the fault rectification deadline is not cancelled if the Contracting Entity refuses to issue a fault rectification confirmation, rather the time elapsed from the date the rectification confirmation was sent (Provider) until the Contracting Entity's answer is not calculated into the rectification deadline).

The fee is reduced for each day that the defined deadline for the replacement of non-functional equipment is exceeded. Fee reductions are calculated separately for each non-functional element. At the end of the accounting period, the MCC will create a Report on the Functionality of parts, elements and equipment, whose part isa **Report on luminaire Functionality**. The Report on luminaire functionality is drawn up automatically through the Management and Control Centre. The fee reduction calculation is conducted on the basis of the Report on the functionality of the Luminaires created through the MCC and approved by the Contracting Entity in accordance with the Contract. A report template has been given in Annex 5 Report Content.

If the measurements of lighting quality parameters at the Test Field and/or on field indicate that the tested luminaires do not meet the Guarantee Lighting qualityConditions, the Contracting Entity will declare the luminaires in question non-functional and deliver to the Provider a **Report on the Measurement of Lightinging qualityConditions.**

If the Contracting Entity expresses doubt regarding the remote reading of parameters through the Management and Control Centre, the Contracting Entity has the right to exclude the luminaire in question from the public lighting system and conduct the measurement of luminaire parameters.

7.3 Reduction due to malfunction or unavailability of the MCC (UUNC)

The Contracting Entity defined within the Technical Requirements (Annex 3 to the Energy Performance Contract) the maximum allowed deadlines for repairing malfunctions within the MCC. Reduction due to the MCC malfunction is the amount of the Fee reduction in the event of failure to meet the required standards of the Management and Control Centre related to events defined by this annex and the Technical requirements (Annex 3 to the Energy Performance Contract). In the event of MCC malfunction, this shall be included in the Report on the record of the MCC application functionality which is created through the MCC and presents the part of theReport on the Functionality of parts, elements and equipment. A report template has been given in Annex 5 Report Content.

The deadline for repairing the MCC malfunction begins to run at the moment when the Contracting Entity records the malfunction and sends the notification to the Provider. After repairing the malfunction, the Provider is obliged to notify the Contracting Entity thereof through the Management and Control Centre stating the time when the malfunction was reported and the time when it was rectified. The malfunction rectification deadline is suspended after the Provider has sent the information that the malfunction has been rectified, but the malfunction is deemed to be rectified only after the Contracting Entity's confirmation. If the Contracting Entity refuses to send a confirmation regarding the malfunction rectification, the deadline continues to run.

7.4 Fee adjustment

At the end of each accounting period the following shall be created:

- **Report on the record of luminaire functionality** (created by the MCC)**;**
- **Report on the installed active power of luminaires** (created by the MCC)**;**
- **Report on the record of the MCC application functionality** (created by the MCC);
- **Fee adjustment report** (created by the MCC)**;**

which will represent the basis for the Fee adjustment and which need to be confirmed by the Contracting Entity prior to issuing the invoice for the Fee. In the event of MCC application malfunction at the moment just prior to the issuing of the invoice, i.e. the inability of creating the Reports mentioned in this chapter, the issuing of the invoice shall be postponed until the moment when all MCC malfunctions are eliminated. It is necessary to attach the Report on Fee Adjustment to the Provider's invoice for the previous calculation period.

8 Specification of measuring devices and authorisation

8.1 Testing the compliance with Technical Requirements

If throughout the contractual period the Contracting Entity expressed doubt about the required technical requirements being met (Annex 3 to the Contract), the Contracting Entity will request the testing of the luminaire in an appropriate laboratory, which will check the compliance of the sample with the technical requirements.

The appropriate laboratory will be chosen according to the minimal acceptability criteria specified in the following table (Table 4).

Table 21 List of criteria which the laboratories for independent control must meet

Description of laboratory	**Requirement items from the Technical Requirements (Annex 3 to the Energy Performance Contract) tested in the laboratory**
Accredited according to the requirements of the HRN EN ISO/IEC 17 025 standard for testing according to methodology defined within HRN EN 13032-1, HRN EN 13032-4	1.1, 4.1, 4.2, 4.3, 4.5, 7.1
Accredited according to the requirements of the HRN EN ISO/IEC 17 025 standard for testing according to methodology defined within HRN EN 55015, HRN EN 61000-3-2, HRN EN 61000-3-3, EN 61547	1.4
Accredited according to the requirements of the HRN EN ISO/IEC 17 025 standard for testing according to methodology defined within HRN EN 60598-1, HRN EN 60598-2-3	1.2, 2.1, 2.5, 3.1, 3.2, 3.3
Accredited according to the requirements of the HRN EN ISO/IEC 17 025 standard for testing according to methodology defined within HRN EN 61643	5.1, 5.2
Accredited according to the requirements of the HRN EN ISO/IEC 17 025 standard for testing according to methodology defined within HRN EN 62262	2.2
Accredited according to the requirements of the HRN EN ISO/IEC 17 025 standard for testing according to methodology defined within IEC TR 62778	4.4
Field laboratory for testing the compliance of the technical solution with the HRN EN 13 201-2:2016 standard	Lighting quality requirements

A 5% measuring tolerance is allowed for photometric testing of correlated colour temperature and luminous flux of the luminaire above the horizontal plane.

8.2 Measuring the installed active power of the Public Lighting System

The measurements of installed active power are conducted in accordance with the rules of the profession by qualified and authorized persons with appropriate measuring instruments of satisfactory accuracy. The measuring devices should have a valid attestation and an equipment calibration certificate issued by an accredited laboratory in accordance with the Regulation (EC), no. 765/2008, which is used to confirm that each measuring device or instrument has been tested by an authorized metrology laboratory and that the metering uncertainty is less than or equal to maximum permitted. The maximum metering uncertainty permitted for a device is 1.0%.

In the event of an automated system for monitoring and verifying energy savings, a measurement report can be compiled from the data collected by that system, provided that the system is calibrated and complies with the prescribed accuracy classes.

8.3 Lighting quality measurements

The lighting quality measurements are conducted in accordance with the rules of the profession by qualified and authorized persons with appropriate measuring instruments of class A accuracy according to IEC 13032-1 and CIE 69. The device has to have a valid attestation and an equipment calibration certificate issued by an accredited laboratory. The device has to be able to detect low levels of illumination, minimal resolution of 0.1 lx. The device has to have the ability to correct the cosine of the incident angle. The spectral sensitivity of the device has to be adjusted to the sensitivity of the human eye.

9 Non-routine changes of guaranteed standards

Non-routine changes of the guaranteed standards of service implies a change for which the Contracting Entity is responsible and which affect the parameters measured in accordance with this M&V Plan.

The adjustment of Guaranteed Installed Active Power of the Luminaires will be carried out if additional sensory or other components which are powered from the luminaire's driver circuit are connected, and which do not relate to the LED module driver and/or communication module.

The adjustment of the Guaranteed lighting quality requirements shall be done in case of change of the road geometry and/or the height and position of illuminated areas in relation to the road.

Due to the fact that the non-routine changes are the Contracting Entity's responsibility, all of the specifications and record keeping of non-routine changes are the Contracting Entity's responsibility.

If non-routine changes occur Provider shall enable inputting them into MCC in order to comply with automatically fee adjustment process.

The Contracting Entity is obligated to record each non-routine change in a table defined in Annex 5 Report Content.

10 Adjustments of the measurement and verification plan

If necessary, this M&V Plan may be modified at the request of the Contracting Entity or the Provider, which is subject to consent of both parties.

11 Testing and inspection recapitulation

Table 22 Testing and inspection recapitulation

Continuous monitoring, measuring and verification (control through the Management and Control Centre)			
Data category	**What is inspected and tested**	**Authorised person**	**Monitoring frequency**
Functionality of the luminaire	If the luminaire is functional (operational/non-operational)	Contracting Entity	Constantly throughout the contractual period
Installed active power of the luminaire	Current active power of the luminaire		
Inspection, measurement and verification at the request of the Contracting Entity on field or at the Test Field			
Data category	**Data**	**Authorised person**	**Monitoring frequency**
Functionality of the luminaire	Positioning of the luminaire at the post location, is the luminaire working	Contracting Entity	According to the Contracting Entity's request
Compliance with the technical requirements of the Contracting Entity	Compliance of the luminaire with the technical requirements of the Contracting Entity in accordance with Annex 3 to the Energy Performance Contract.		
Installed active power of the luminaire	Active power of the luminaire in all dimming regimes		
Average illuminance	Light-technical request of average luminance		
Overall uniformity	Light-technical request of general uniformity		
Longitudinal uniformity	Light-technical request of longitudinal uniformity		
Relative increase of the threshold	Light-technical request of relative increase of the threshold		
Lighting the surrounding area	Light-technical request of relative illumination of surrounding area		
Average luminance	Light-technical request of average luminance		
Minimum illuminance	Light-technical request of minimal luminance		

(Contracting Entity)

Energy Performance Contract
Annex 5 Content of the Report, Agreement and Minutes

Download editable Annex 5 document here.

Content

This annex contains report templates, agreement templates and minutes templates, which appear during the duration of the Energy Performance Contract. During the duration of the Contract it is possible to change the content of the templates only with the approval of both the Contracting Entity and the Provider.

1 Designing phase

1.1 Minutes on the choice of luminaire type (ZP-01)

WHEN: After the Contract signing and the performed control of luminaire type, but before the drafting of the Design documentation
WHO: Contracting Entity
DETAILS: Annex 3 Technical requirements, Part B of TECHNICAL REQUIREMENTS – Period of implementation of the MCC and the Designing Phase

Minutes on the choice of luminaire type	**ZP-01**
Contracting Entity	
Provider	

Type 1 luminaire name	
List or the description of the locations where type 1 luminaires will be mounted	
Additional Contracting Entity notes	

Type 2 luminaire name	
List or the description of the locations where type 2 luminaires will be mounted	
Additional Contracting Entity notes	

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Type X luminaire name	
List or the description of the locations where X type luminaires will be mounted	
Additional Contracting Entity notes	

Other Contracting Entity notes	

Place, date Contracting Entity signature

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1.2 Approval to change the luminaire type (ZP-02)

WHEN: If luminaire types change in relation to the luminaire types chosen by the Minutes on the choice of luminaire type (ZP-01)
WHO: Provider
DETAILS: Annex 3 Technical requirements, Part B of TECHNICAL REQUIREMENTS – Period of implementation of the MCC and the Designing Phase

Approval to change the luminaire type	**ZP-02**
Contracting Entity	
Provider	

Filled out by the Provider:	
Name of luminaire type referred to in the Minutes on the choice of luminaire type	
Suggested replacement luminaire type*	
Explanation of replacement suggestion	

*For the replacement luminaire type it is necessary to provide all evidence referred to in Annex 3 Technical requirements, Part B of TECHNICAL REQUIREMENTS – Period of implementation of the MCC and the Designing Phase

Place, date Provider signature

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Filled out by the Contracting Entity:	
The Contracting Entity complies with the suggested Replacement Luminaire Type	
Contracting Entity's comment on the suggested replacement luminaire type	
Other Contracting Entity notes	

Place, date Contracting Entity signature

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1.3 Approval of the Conceptual design for the Management & Control Centre (ZP-03)

WHEN: Upon completion of the Management & Control Centre conceptual design
WHO: Contracting Entity
DETAILS: Annex 3 Technical requirements, Part B of TECHNICAL REQUIREMENTS – Period of implementation of the MCC and the Designing phase

Approval of the Management & Control Centre conceptual design			**ZP-03**
Documentation title			
Contracting Entity			
Provider			
Documentation submission date			
Approval criterion	**YES**	**NO**	**Note**
Conceptual design drafted according to the Management & Control Centre Project task			
MODULES			
Module 1 – Static data			
Module 2 – Long-distance data reading			
Module 3 – Data archiving			
Module 4 – Data representation			
Module 5 – Sending data in order of managing operating and dimming regime of the public lighting			
Module 6 – Alarms			
Module 7 – Calculations and reports			
Module 8 – Control module			
Module 9 – Planning and supervision of the public lighting system			
Module 10 – Receiving and processing data from the sensor			
Integration of the existing systems			
Interactive support			
Communication between the Contracting Entity and the Provider			
Position of the MCC			
Speed of response			
Mobile application			
Other requirements			
The Contracting Entity approves the Conceptual software solution of the Management & Control Centre			
Other Contracting Entity notes			

These Minutes have been drafted in two identical copies, one copy for each party.

Place, date Contracting Entity signature

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1.4 Approval of the Management & Control Centre programme solution (ZP-04)

WHEN: Upon completion of the Management & Control Centre programming and implementation
WHO: Contracting Entity
DETAILS: Annex 3 Technical requirements, Part B of TECHNICAL REQUIREMENTS – Period of implementation of the MCC and the Designing phase

Approval of the Management & Control Centre programme solution			**ZP-04**
Documentation title			
Contracting Entity			
Provider			
Documentation submission date			
Approval criterion	**YES**	**NO**	**Note**
Conceptual design in accordance with the Management & Control Centre Project task			
Module functionality			
Module 1 – Static data			
Module 2 – Long-distance data reading			
Module 3 – Data archiving			
Module 4 – Data representation			
Module 5 – Sending data in order of managing operating and dimming regime of the public lighting			
Module 6 – Alarms			
Module 7 – Calculations and reports			
Module 8 – Control module			
Module 9 – Planning and supervision of the public lighting system			
Module 10 – Receiving and processing data from the sensor			
Integration of the existing systems			
Interactive support			
Communication between the Contracting Entity and the Provider			
Position of the MCC			
Response speed			
Mobile application			
MCC fully implemented and functional			
Other requirements			
The Contracting Entity approves the Management & Control Centre programme solution			
Other Contracting Entity notes			

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1.5 Design documentation approval (ZP-05)

WHEN: Upon completion of the Design documentation
WHO: Contracting Entity
DETAILS: Annex 3 Technical requirements, Part B of TECHNICAL REQUIREMENTS – Period of implementation of the MCC and the Designing phase

Design documentation approval			**ZP-05**
Documentation title			
Contracting Entity			
Provider			
Documentation submission date			
Approval criterion	**YES**	**NO**	**Note**
Design documentation content is complete			
Designed solution in accordance with the Minutes on the choice of luminaire type			
Designed technical solution meets the technical requirements			
Typical profiles defined			
Lighting quality requirements met			
Energy requirements met			
Technical solutions in accordance with other requirements from Annex 3. Technical Requirements			
Design documentation carried out in accordance with other instructions and requirements of the Contracting Entity			
All possible defects of the MCC corrected			
All of the designed luminaires entered in MCC with all related data			
Other Contracting Entity notes			
The Contracting Entity approves the Design documentation			

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2 Reconstruction and/or modernisation phase

2.1 Approval of the Design documentation deviations (ZP-06)

WHEN: Upon completion of the Design documentation, before and during the implementation of the Measures for improving energy efficiency
WHO: Contracting Entity
DETAILS: Annex 3 Technical requirements, PART C – Execution phase

Approval of the Design documentation deviations			**ZP-06**
Documentation title			
Contracting Entity			
Provider			
Deviation description			
Approval criterion	**YES**	**NO**	**Note**
The new suggested solution in accordance with the Client's technical requirements (Annex 3 to the Contract)			
The Contracting Entity approves the visuals of the new solution			
The Contracting approves the deviations and grants authorisation for the Measures to be implemented with the suggested solution			
Note by the Contracting Entity			

These Minutes have been drafted in two identical copies, one copy for each party.

Place, date

Contracting Entity signature

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2.2 Contracting Entity's approval of the Minutes on the executed works of reconstruction and/or modernisation (ZP-07)

WHEN: Upon completion of modernisation and submission of minutes on executed works
WHO: Contracting Entity
DETAILS: Content of the Minutes of the Overhaul and/or Upgrade Works Performed is indicated in chapter 2.3.

Approval of the Minutes on the executed works of reconstruction and/or modernisation			**ZP-07**
Contracting Entity			
Provider			
Submission date of the Minutes on the executed works of reconstruction and/or modernisation by the Provider			
Approval criterion	Submitted and in accordance with th Contract	Not submitted and/or not in accordance with the Contract	Note
Provider's statement on the executed works is comprehensive			
Provider's statement on the executed works is certified by the construction site manager and the Provider			
Statement of Guarantee is comprehensive			
Annexes to the statement of Guarantee are comprehensive			
Report on the executed registration of works and equipment and measurement of the Management & Control Centre is complete			
Management & Control Centre has been fully entered and is completely functional			
The Contracting Entity approves the Minutes on the executed works of reconstruction and/or modernisation			
List of minor defects of the Public Lighting System			
Deadline for removing the defects			
Other Contracting Entity notes			

By these Minutes, it is hereby confirmed that the Contracting Entity (tick box with X):

	ACCEPTS the Measures for improving energy efficiency
	CONDITIONALLY ACCEPTS the Measures for improving energy efficiency
	DOES NOT ACCEPT the Measures for improving energy efficiency

Place, date Contracting Entity signature

_____ _____

2.3 Content of the Minutes on the executed works of reconstruction and/or modernisation

The Minutes on the executed works of reconstruction and/or modernisation must contain at least the following:

- Statement on the works completed;
- Statement of guarantee;
- Report on the executed registration of works and equipment and measurement via the Management & Control Centre;
- Supervising Engineer's final report;
- Insurance policies in accordance with the Contract.

Content of Statement on the works completed

A statement on the works completed must contain at least the following:

- Name of the construction work;
- Contractor(s) data;
- Data on the Supervising Engineer or any other person responsible for the construction works;
- Data on the main/construction design or any other design used to perform the construction works;
- Statement on the compliance with the Measures for improving energy efficiency outlined in the main/construction design;
- Data on the modifications introduced during reconstruction and/or modernisation with regard to the main/construction design;
- Report on the execution of works and installation of construction elements and equipment, or technical instructions for the installation and use thereof;
- Statement on any works that have not been performed within the scope in question and about their impact on the usability of facilities;
- List of evidence on the characteristics of installed construction products in relation to their essential characteristics;
- List of evidence on the compliance of the installed equipment and/or facilities under a special act;
- Certificate of compliance of certain parts of the facility with basic construction requirements;
- List of quality assurance evidence (test results, records on the performed quality checks, etc.);
- List of granted approvals necessary for the execution of works;
- Body of other evidence of usability, i.e. other relevant documentation under a special regulation;
- Test certificates and compliance certificates related to the equipment installed;
- List of removed equipment;
- Supervising Engineer's report.

Statement of guarantee

The Service Provider shall deliver, together with the Minutes on the executed works of reconstruction and/or modernisation, the warranties and insurance policies required under the Energy Performance Contract:

- Copies of the supplier's/manufacturer's warranty for all elements of the Public Lighting System installed under the Measures for improving energy efficiency;
- Statement or warranty that spare or replacement parts will be available at least ten years from the day of adoption of the Measures for improving energy efficiency;

- Copy of an extended warranty for the luminaires until the Contract expiry (unless the basic warranty covers the entire period).

Report on the executed registration of works and equipment and measurement via the Management & Control Centre

- Statement on the full registration of all luminaires covered by the Measures for improving energy efficiency;
- Statement on the full functionality of the parts, elements and equipment included within the scope of the Measures for improving energy efficiency;
- Report on the measurement of the installed active power of the luminaires compared to the guaranteed installed active power.

Additional specific requirements related to the source of financing

If the public lighting system reconstruction and/or modernisation project is funded via co-financing, it is necessary to fulfil any related conditions, if known until the date of publication of this public tender and attached to this tender documentation.

3 Use Phase

3.1 Report on as-is state (ZP-08)

WHEN: Period of execution
WHO: automatically created by the MCC
DETAILS: Annex 3 Technical Requirements, Part A of the Technical Requirements – Minimum Technical Requirements and Service Standards

Report on as-is state	**ZP-08**
Contracting Entity	
Provider	
Period that the Report addresses (date, time)	
Number of luminaires modernised in the period for which the Report on as-is state was created	
Total normed active power of the luminaires	
Guaranteed normed active power	
Overall number of functional modernised luminaires	
Total normed active power of the luminaires	
Guaranteed normed active power	
Number of luminaires in the scope of the implementation of Measures for improving energy efficiency of the Public Lighting System that are not modernised	

3.2 Report on the Functionality of Parts, Elements and Equipment (ZP-09)

WHEN: Use Phase
WHO: automatically created by the MCC
DETAILS: Annex 4 Monitoring, Measurement and Verification Plan

Report on the Functionality of Parts, Equipment and Elements and Equipment Functionality	**ZP-09**
Contracting Entity	
Provider	
Calculation period	
Report date	

Overall fee reduction due to non-functioning luminaires in the calculation period (ZP-10)	
Overall fee reduction due to non-functioning MCC application in the calculation period (ZP-11)	
Total fee reduction	

3.3 Report on the luminaire functionality (ZP-10)

WHEN: Use Phase
WHO: automatically created by the MCC
DETAILS: Annex 4 Monitoring, Measurement and Verification Plan

Report on the luminaire functionality	**ZP-10**
Contracting Entity	
Provider	
Calculation period	
Report date	

Number of days elapsed between failure reporting to the MCC and eliminating the failure	**Number of luminaires In illuminated areas classified as M1/C0, M2/C1, M3/C2, P1**	**Number of luminaires in other illumination classes**	**Number of luminaires when a bigger number of luminaires is non-functional***
1 day			
2 days			
3 days			
4 days			
5 days			
6 days			
7 days			
X days			

* If six or more luminaires connected to the same metering point are not functioning

Overall fee reduction due to non-functioning luminaires in the calculation period	

3.4 Report on the MCC application functionality (ZP-11)

WHEN: Use Phase
WHO: Manual
DETAILS: Annex 4 Monitoring, Measurement and Verification Plan

Report on the MCC application functionality	**ZP-11**
Contracting Entity	
Provider	
Calculation period	
Report date	

Number of MCC malfunction alerts	

Date and time of the first MCC malfunction alert in the calculation period	
Date and time of the first MCC malfunction elimination in the calculation period	
Number of days elapsed between the first malfunction reporting and its elimination	

Date and time of the second MCC malfunction alert in the calculation period	
Date and time of the second MCC malfunction elimination in the calculation period	
Number of days elapsed between the second malfunction reporting and its elimination	
Date and time of the X* MCC malfunction alert in the calculation period	
Date and time of the X* MCC malfunction elimination in the calculation period	
Number of days elapsed between X* malfunction reporting and its elimination	

*where X is the number of MCC application malfunctions in the calculation period

Overall fee reduction due to non-functioning MCC application in the calculation period	

3.5 Report on the measured and installed active power of the Public Lighting System (ZP-12)

WHEN: Use Phase
WHO: automatically created by the MCC
DETAILS: Annex 4 Monitoring, Measurement and Verification Plan

Report on the installed active power of the Public Lighting System	**ZP-12**
Contracting Entity	
Provider	
Calculation period	
Report date	
Electrical energy unit cost (EUR/kWh) in the calculation period	

Overall fee adjustment due to the measurement of energy efficiency standard (UE)*	

*If the UE is positive, the Provider has not achieved the Guaranteed Savings and the fee is reduced; if the UE is negative, the Provider has achieved greater savings and the fee is increased.

Mandatory annexes in the digital format:
Annex 1 Table view of all measuring intervals with the measured values and the guaranteed installed active power of the Public Lighting System in *.csv or *.xlsx format
Annex 1 Diagram representing the deviation of the measured active power of the Public Lighting System from the guaranteed installed active power of the Public Lighting System per day in the calculation period where the date and time of the measuring should be seen on the x-axis and the active power expressed in kW on the y-axis

Annex 1 Table view of all measuring intervals with the measured values and the guaranteed installed active power of the Public Lighting System

Number of the measuring interval	Date of measuring	Time of measuring	Number of operating hours of the luminaire since the previous measuring*	Number of functioning luminaires at the time of measuring	Overall measured active power of all functioning luminaires (kW)	Guaranteed installed active power of all functioning luminaires (kW)	Difference
					A	B	A-B
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
...							
Total							

*difference between the current measuring and the previous measuring excluding the first measuring

3.6 Report on measurement of lighting quality parameters (ZP-13)

WHEN: Monitoring, reporting as requested by the Contracting Entity
WHO: Contracting Entity
DETAILS: Annex 4 Monitoring, Measurement and Verification Plan

Report on measurement of lighting quality parameters	**ZP-13**
Contracting Entity	
Provider	
Report date	
Test method	
Location of measuring	
Date of measuring	
Contracting Entity's authorised person	
Provider's authorised person	

Representation of measuring results:

Place, date signature

Signature of the person performing the measuring

Contracting Entity

_____ _____ _____

3.7 Fee adjustment report (ZP-14)

WHEN: within 5 days after the expiry of the calculation period
WHO: automatically created by the MCC
DETAILS: Annex 4 Monitoring, Measurement and Verification Plan

Fee adjustment report	**ZP-14**
Contracting Entity	
Provider	
Calculation period	
Date	

	EUR (VAT included)
A. Total contracted Fee	
B. Reduction amount due to non-functioning (ZP-9)	
C. Adjustment amount due to deviation the Guaranteed installed active power of luminaires (ZP-12)*	
D. TOTAL FEE AMOUNT TO BE PAID OUT (A-B-C)	

*Value is negative if measured installed active power is smaller than Guaranteed installed active power

3.8 Maintenance report (ZP-15)

WHEN: Use Phase
WHO: automatically created by the MCC
DETAILS: The Maintenance Report should contain the specifications of all installed and replaced equipment, as well as the record of all maintenance work performed in a particular time period and on a particular group of luminaires. Equipment and work relate to the equipment and work delivered by the Provider (filled out by the Provider) and the Contracting Entity (filled out by the Contracting Entity). Via the MCC, the Provider shall keep a record of all such replacement activities, together with the technical specifications of the installed parts, elements and equipment.

Maintenance report	**ZP-15**
Contracting Entity	
Provider	
Period that the Report addresses (date, time)	
Number of luminaires on which maintenance works have been performed	

Unique identification number of luminaire 1			
Description of maintenance work	Date		
	Date		
	Date		
	Date		
List of installed equipment	Date		
	Date		
	Date		
	Date		

Unique identification number of luminaire 2			
Description of maintenance work	Date		
	Date		
	Date		
	Date		
List of installed equipment	Date		
	Date		
	Date		
	Date		

Unique identification number of luminaire X			
Description of maintenance work	Date		
	Date		
	Date		
	Date		
List of installed equipment	Date		
	Date		
	Date		
	Date		

3.9 Request to change the luminaire installation location (ZP-16)

WHEN: Design phase, execution phase, use phase
WHO: Contracting Entity
DETAILS: Annex 3 Technical Requirements

Request to change the luminaire installation location	**ZP-16**
Contracting Entity	
Provider	
Date of request	
Description of the originally intended installation location	
Exact description of the new installation location	
Number of luminaires intended for the change of installation location	

Place, date

Contracting Entity signature

_____

_____

3.10 Request for delivery of particular luminaire types on which inspection will be conducted (ZP – 17)

WHEN: every phase of Contract execution
WHO: Contracting Entity
DETAILS: Annex 3 Technical Requirements

Request for delivery of particular luminaire types which will be inspected	**ZP-17**
Contracting Entity	
Provider	
Date of request	
Luminaire identification number (if taken from on-site location)	
Name of manufacturer, type and label of the luminaire	
Instructions for the delivery of the luminaire to the Contracting Entity (the address to which the luminaire is to be delivered)	
Number of luminaires that need to be delivered	

Place, date

Contracting Entity signature

_____

_____

3.11 Record of non-routine changes (ZP-18)

WHEN: every phase of Contract execution
WHO: Management & Control Centre (MCC)
DETAILS: The Contracting Entity shall record all non-routine changes of the public lightning system covered by the Measures and shall inform the Provider thereon in writing at least 96 hours before the implementation of each change

Record of non-routine changes	**ZP-18**
Contracting Entity	
Provider	

Change description	
Change date	
Expected period of validity of the change	
Description of recording of changes, i.e. instructions for future periods of monitoring, measurements and verification	

Place, date

Contracting Entity signature

_____

_____

3.12 Minutes on the performed final audit (ZP-19)

WHEN: Six months before Contract expiry
WHO: Independent expert engaged by the Contracting Entity (Authorised Person)
DETAILS: A detailed verification and testing of the state and technical functions of the elements and equipment installed within the implementation of the Measures for improving energy efficiency (Measures) shall be conducted within the Final Audit and inspection.

Minutes on the performed final audit	**ZP-19**
Contracting Entity	
Provider	
Independent expert	
Date of the drafting of Minutes	

Report on the performance of functionality audit		
All luminaires are functional	**YES**	**NO**

Report on measuring the active power of the luminaires		
Installed active power is lower than or equal to the Guaranteed installed active power	**YES**	**NO**

Report on measurement of lightning quality requirements		
Lightning quality requirements are in accordance with the Guaranteed Lightning Quality Requirements	**YES**	**NO**

Luminaires comply with the Contracting Entity's Technical Requirements (Annex 3 to the Contract)		
Luminaires comply with the Technical Requirements	**YES**	**NO**
Luminaires are undamaged (IP/IK/ anti-corrosive protection)	**YES**	**NO**

Other notes by the Independent Expert		
All luminaires are functional	**YES**	**NO**

Conclusion	

Notes	

Place, date

Authorised person's signature/stamp

_____

_____

(Contracting Entity)

Energy Performance Contract
Annex 6 Tender

Tender means the Provider's tender No:_____ i.e. the most economically advantageous tender selected under the open public procurement procedure, procurement registration No:_____ ;

The Tender with all its integral elements ... is attached hereto.

(Contracting Entity)

Energy Performance Contract
Annex 7 Investment value

Download editable Annex 7 Excel document here.

Contents

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(Contracting Entity)

Energy Performance Contract
Annex 8 Payment Plan and Savings Plan

Download editable Annex 8 Excel document here.

Contents

NOTE:
PAY SPECIAL ATTENTION WHEN FILLING IN: TENDERERS FILL IN ONLY THE YELLOW CELLS.

(Contracting Entity)

Energy Performance Contract

Annex 9 Plan of implementation of Measures for improving energy efficiency and of additional non-energy services

As a part of their tenders, the tenderers shall submit the Plan of implementation of the Measures for improving energy efficiency and of additional non-energy services, which represents the time schedule of Project activities.

As a bare minimum, each tenderer is obliged to indicate the deadlines in relation to the beginning and end of the following activities:

- designing activities;
- MCC implementation activities ;
- reconstruction and/or modernisation activities;
- installation of equipment for provision of additional non-energy services (commercial and non-commercial);
- beginning and end of use.

Considering the fact that, in the moment of Tender submission, the actual date of signing of the Contract is unknown, the deadlines can be relative, based on the date of signing of the Contract.