



## Terms of Reference / Technical Specification Clauses

### I. **Procurement Title:** Blood-Pack Units for Red Cell Concentrate Filtration – Top & Bottom (BAT) Configurations

### II. **Background/ Purpose**

The Lebanese Red Cross Blood Transfusion Services (LRC-BTS) requires high-quality **Bottom and Top (BAT) blood-pack systems** for whole blood collection and preparation of red cell concentrates, plasma, and platelets via optimal buffy coat removal.

This TOR is based on the **European Blood Alliance (EBA)** specifications, **EDQM (Council of Europe)** guidance, and applicable **ISO standards and EU Medical Device Directives**, ensuring safety, performance, traceability, and compatibility with automated component processing.

### III. **Objective / Scope of Work**

The objective of this procurement is to supply **validated, closed-system BAT blood-pack units** with **integrated red cell leukodepletion filtration**, suitable for routine blood collection and component preparation at LRC-BTS.

The scope includes supply, qualification, documentation, training, validation support, and delivery to LRC facilities.

### IV. **Detailed Specifications / Requirements**

#### I. **Specifications:**

The Bottom and Top (BAT) blood collection system must meet the basic standards for conformance with latest versions of established standards according to International Organization for Standardization (ISO) standards<sup>1</sup> and European directives advised by the Council of Europe<sup>2</sup>, and the European Blood Alliance<sup>3</sup>.

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<sup>1</sup> ISO standards 11.040.20 for Transfusion, infusion and injection equipment including blood packs and containers for transfusion, ISO, [available here](#)

<sup>2</sup> 21<sup>st</sup> Guide to the preparation, use and quality assurance of blood components, European Directorate for the Quality of Medicines and Healthcare, Council of Europe, 2023, [available here](#)

<sup>3</sup> Specification for Whole Blood Collection Systems including Leucodepletion Filters, European Blood Alliance, 2015, [available here](#).

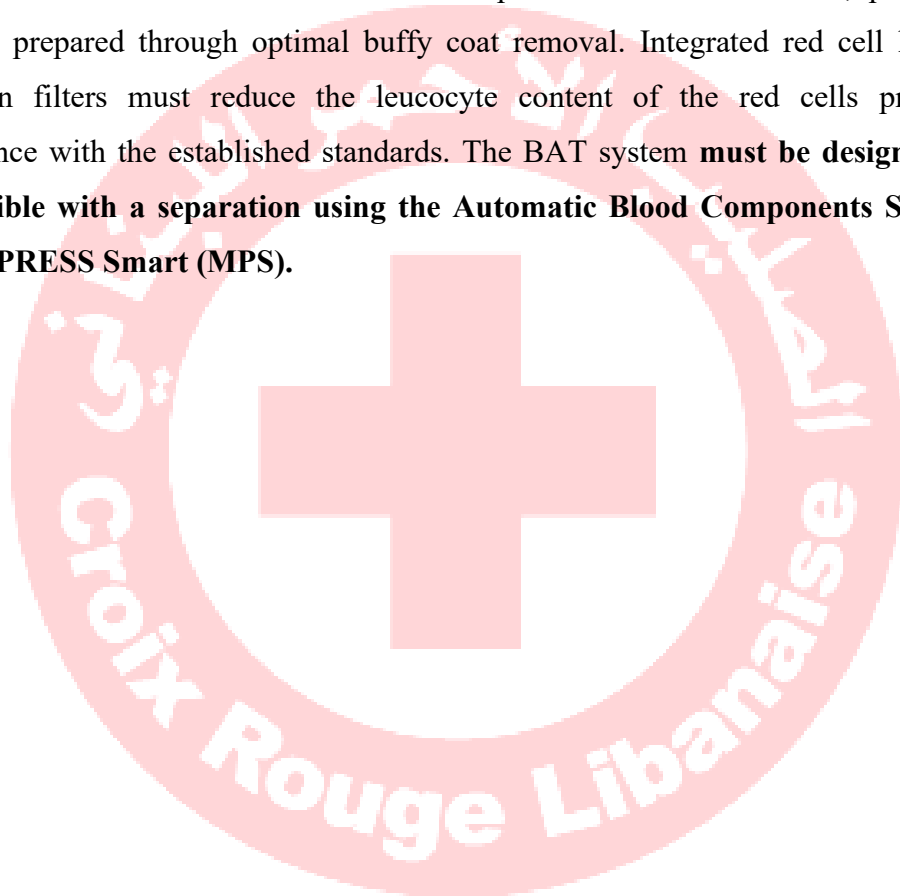
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Manufacturers must provide documentation comprising detailed product specifications and instructions for use. Suppliers must maintain these technical specifications as a controlled document to ensure that any proposed changes to their products can be identified and notified to the customer before any changes are made.

The BAT system shall comprise a closed system for whole blood collection and separation of three different blood components - red blood cells, plasma and platelets prepared through optimal buffy coat removal. Integrated red cell leukocyte depletion filters must reduce the leucocyte content of the red cells product in accordance with the established standards. The BAT system **must be designed to be compatible with a separation using the Automatic Blood Components Separator MACOPRESS Smart (MPS).**



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### 1. GENERAL REQUIREMENTS

#### 1.1. Quality

##### 1.1.1 Specifications and compliance for:

###### 1.1.1.1 Blood collection systems must:

- a. be designed to adhere to the normative references EN ISO 3826-1, EN ISO 3826-2, EN ISO 3826-3, EN ISO 15223-1, EN 980; in order to ensure;
  - Physical requirements including sterilisation, transparency, coloration, thermal stability, water vapour transmission, resistance to leakage and particulate contamination.
  - Chemical requirements including the raw container or sheeting and test fluid
  - Biological requirements including general, impermeability for micro-organisms and compatibility.
- b. be intended for the collection of human blood and blood components
- c. be affixed with the CE marking (Conformité Européenne) in compliance with the European Medical Devices Directive.
- d. have a sterile fluid pathway and be non-pyrogenic.

###### 1.1.1.2 Integral leucodepletion filters

- a. When used in accordance with Supplier's instructions, filters must reduce the leucocyte content of the final product in accordance with the current EU Blood Safety Directive and Council of Europe guide to the preparation, use and quality assurance of blood components.
- b. Following filtration, blood components must comply with the EU Blood Safety Directive and EDQM (CoE) guide to the preparation, use and quality assurance of blood components. This is particularly important with regard to final hemoglobin content of red cell components.
- c. Filters for the leucodepletion of red cells must perform optimally for components with a core temperature in the range 4°C to 24°C.
- d. Filtration of red cells must be completed for >99% of donations within 120 minutes from the time at which the fluid path is open.
- e. Filtration efficiency: White cell residuals consistently averaging less than  $1 \times 10^6$ .

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- f. If alternative brands to Fresenius, Haemonetics, Macopharma, and Terumo are offered, their specifications must be on par or equivalent to previously mentioned brands.  
They should provide full documentation on filtration efficiency and full support on training, validation and implementation. (Support will include expertise and financial coverage of validation tests) English version is required.

### **1.1.2 Documents to provide by suppliers**

Suppliers must provide quality management system documentation for review, including but not limited to:

- Quality Manual outlining overarching quality policies and procedures
- Electronic and hard copies of user manual including: collection, filtration, packaging for centrifugation and separation processes, service manual and complete construction details with respect to material specifications. English version is required.
- Sourcing SOPs / Recall SOPs / Storage SOPs / Distribution SOPs /....
- Any other documentation that describes quality management processes related to the product.

### **1.2. Others requirements**

#### **1.2.1. Professional capacities**

Suppliers should provide the following documents:

- Year of the company establishment
- Any documents attesting of the professional capacities, such as: Business type / Global sales turnover and sales turnover concerning the supplies of the contract made during the last three known exercises of the candidate / Assessments, income statement and its appendices over the last two years...

#### **1.2.2. Stocks / Lead-time**

Suppliers should provide the following information:

- Current stocks available in Lebanon.
- Minimum stock in Lebanon guaranteed at all time.
- Maximum lead-time between order placement and delivery.

#### **1.2.3. Experience**

Suppliers should provide the following information and related supporting documentation:

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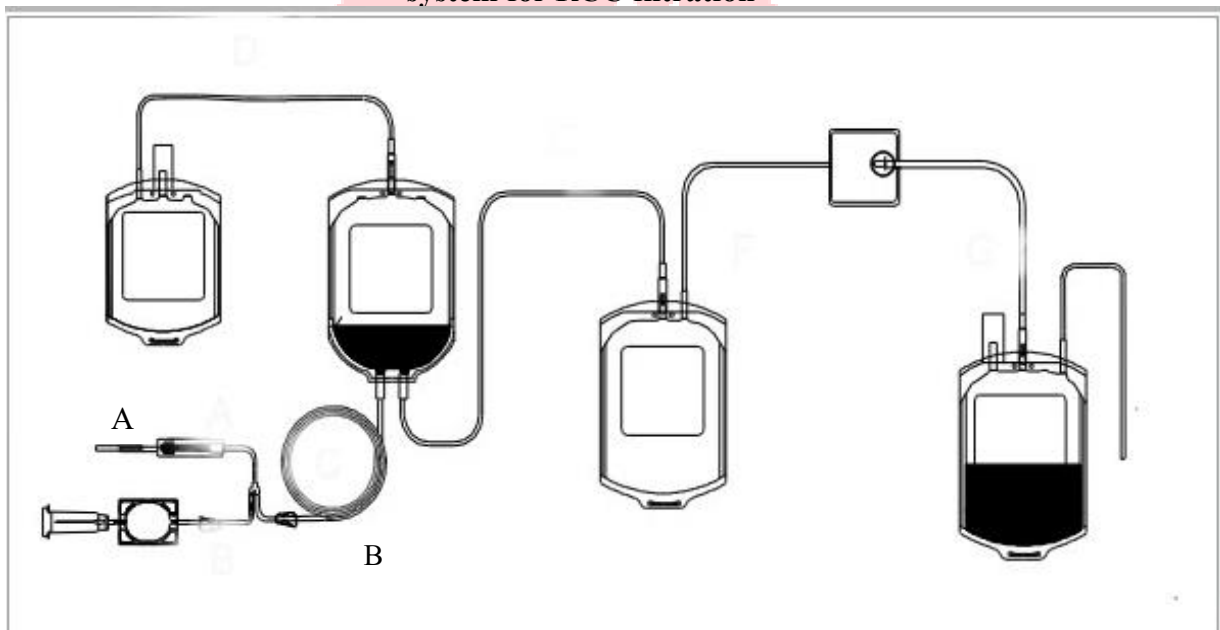


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- Experience in providing health product in the Lebanese market
- Experience in providing blood collection system related products, including in the Lebanese market
- Experience with Lebanese University hospitals
- Experience with LRC

## 2. DESIGN

**Figure 1: represent an example of Bottom and Top (BAT) Blood collection system for RCC filtration**



A+B: Donor line may be top or bottom entry to primary collection pack.

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**2.1. Needle and needle guard**

**2.1.1. Design characteristics**

	Needle sheath (cover) (a)	Present and tamper evident attachment to the needle hub prior to use.
	Bevel indicator on hub	Present and detectable visually or by touch
	Needle guard (b)	Present and interlocking with needle. The needle must lock efficiently into the protector after removing the needle sheath. The needle assembly should not be capable of locking into the protector before the needle cover is removed..
	Interlock indicator	Sensory indicator when locking occurs e.g. a 'click' that may be felt or heard
	Needle guard action	Capable of single step withdrawal of needle from vein and directly into needle guard.

**2.1.2 Design Requirements**

- 2.1.2.1 The needle and needle guard must be compliant with the normative references EN ISO 3826-1 and EN ISO 3826-3.
- 2.1.2.2 There must be a visible or tactile means of indicating the position of the needle bevel.
- 2.1.2.3 The needle shall not be fitted with a stylet (an opening/hole in the back of the needle).
- 2.1.2.4 Design of the donor line and integral needle must incorporate a needle guard which can be permanently sleeved over the needle once removed from the venipuncture site and prior to disposal.
- 2.1.2.5 The design of the needle and the needle guard assembly must not significantly interfere with the venipuncture process.
- 2.1.2.6 On completion of venipuncture and during the collection episode, the needle must be capable of being fixed in position and unable to rotate except when manual adjustment is required.
- 2.1.2.7 In operation, the needle assembly should be designed to be capable of lying flat against the arm without affecting the 'lie' of the needle in the vein.
- 2.1.2.8 The design of the needle and guard must be such that it is capable of being withdrawn from the venipuncture site smoothly, in a single step, directly into the needle guard.

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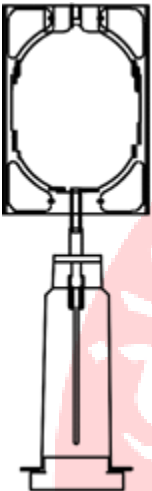
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Engagement of the guard should require minimal force and should preferably be signaled to the operator by an audible click or tactile indication.

**2.1.2.9** The donor needle sheath should be rigid and designed to prevent bending of the needle during removal.

**2.2 Sample Coupler and Diversion Pouch**

**2.2.1 Design characteristics**

 <p>Sample coupler and diversion pouch</p>	Nominal fill volume of diversion pouch	Must have a nominal fill capacity of 35 ml with a maximum fill volume of 40ml.
	Protective cap on sample coupler	Must be present and fitted in place by manufacturer
	Opacity of sample coupler	Transparent
	Length of sample coupler	The barrel of the sample site coupler must extend at least 20 mm beyond the tip of the needle..
	Use of sample coupler	Suitable for the sequential collection of a minimum of 3 samples, without leakage, when used with standard evacuated blood collection tubes.

**2.2.2 Design Requirements**

**2.2.2.1** The sampling coupler and diversion pouch must be compliant with the normative references EN ISO 3826-1 and EN ISO 3826-3.

**2.2.2.2** Sampling systems must incorporate a sample diversion pouch and sample site coupler for the aseptic collection of blood samples during the donation process. These items shall be an integral part of the blood collection system, obviating the need for collection staff to assemble components prior to use. The sampling system must be linked to the bleed line by a sterile fluid pathway.

**2.2.2.3** The sampling system, must allow the pre-donation collection of venous blood samples direct from the vein.

**2.2.2.4** The sample diversion pouch must be suitable for the collection of 35 ml of whole blood.

**2.2.2.5** The design must incorporate an appropriately positioned integral break cannula. The sample line must incorporate a non-re-openable clamp to close the line permanently after diversion of the requisite amount of blood into the sample pouch.

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- 2.2.2.6 The design must incorporate a temporary closure device on the line to the primary collection pack in order to allow control of the filling of donation and sample tubes as two distinct phases in the collection of the donation.
- 2.2.2.7 Closure devices on the lines to the sample pouch and to the primary collection pack should be color coded.
- 2.2.2.8 Sample site couplers must be compatible with the dimensions of vacuum sample tubes
- 2.2.2.9 When used in conjunction with Customer sample tubes, the sampling system must not result in visible haemolysis (< 2g/L of free haemoglobin in supernatant plasma of freshly collected samples.
- 2.2.2.10 Blood diverted for sample tube filling must not be contaminated with anticoagulant (from the primary pack) to a concentration that prevents clotting in a non-anticoagulated sample i.e. not greater than 1 ml of anticoagulant may gain entry to the sample pouch .
- 2.2.2.11 The sample site coupler must be fitted with a safety cap *in situ* to be removed prior to sample collection and which may be refitted following sample collection. An acceptable alternative will be a needle and needle guard assembly, which can be fitted into the sample site coupler to provide a closed system against needle-stick injury.

**2.3 Bags Design Characteristics**

**2.3.1 Primary collection pack**

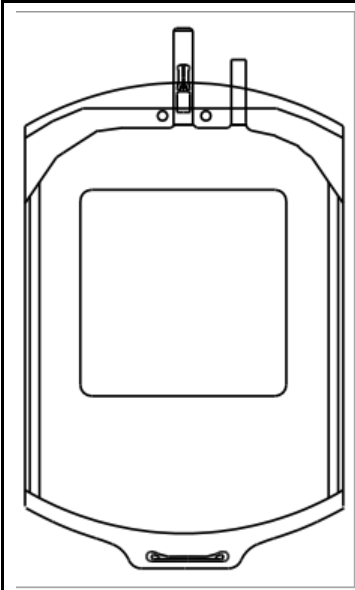
	Nominal pack volume	600 ml
	Anticoagulant	CPD based (63 ml)
	Target collection volume (range)	450 ml (405 - 495 ml)
	Spike entry ports and Side slits	Not Applicable
	Suspension holes (eyelets)	Yes
	Suspension slit (eyelet)	No
	Base label	Yes
	Base label text	<ul style="list-style-type: none"> <li>• Manufacturers name and address</li> <li>• Blood bag reference and batch number</li> <li>• Anticoagulant symbol and chemical formulation, written in British English</li> </ul>
	Entry point of donor bleed line	<ul style="list-style-type: none"> <li>• Either top or bottom of pack</li> </ul>

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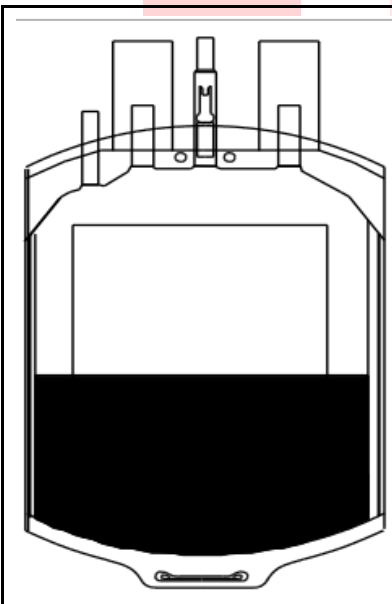


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**2.3.2 Red cell intermediate pack**

	Nominal pack volume	500-600 ml
	Spike entry ports	Not Applicable
	Side slits (eyelets)	Not Applicable
	Suspension holes (eyelets)	Yes
	Suspension slit (eyelet)	Yes
	Base label required	Yes
	Base label text	<ul style="list-style-type: none"> <li>• Manufacturers name and address</li> <li>• Blood bag reference and batch number</li> </ul>

**2.3.3 Optimal Additive Pack; Red cell storage pack**

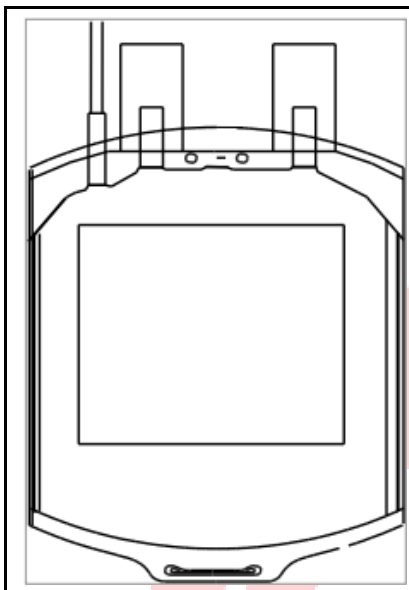
	Nominal pack volume	500-600 ml
	SAG-M / OAS volume	100-105 ml
	Spike entry ports	Two
	Side slits (eyelets)	Yes (minimum of 2 x 25 to 30 mm in length on the same side)
	Suspension holes (eyelets)	Yes
	Suspension slit (eyelet)	Yes
	Base label required	Yes
	Base label text	<ul style="list-style-type: none"> <li>• Manufacturers name and address</li> <li>• Blood bag reference and batch number</li> <li>• Additive symbol and chemical formulation, written in British English</li> </ul>

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**2.3.4 Plasma Storage Pack**



Nominal pack volume	600 ml
Spike entry ports	Two
Side slits (eyelets)	Not Applicable
Suspension holes (eyelets)	Yes
Suspension slit (eyelet)	Yes
Base label required	Yes
Base label text	<ul style="list-style-type: none"> <li>• Manufacturers name and address</li> <li>• Blood bag reference and batch number</li> </ul>

**2.4 Collection and transfer tubes**

- 2.4.1 The collection and transfer tubes must be compliant with the normative reference EN ISO 3826-1.
- 2.4.2 Collection and transfer tube internal and external diameters and wall thickness must enable to make sterile connections.
- 2.4.3 To enable blood banks to make an assessment of compatibility with processing equipment (including sterile tube welders), Suppliers must provide information accurately stating the internal and external tube diameter and wall thickness of all transfer tubes.
- 2.4.4 Tubes designated for red cell compatibility testing should be a minimum of 500 mm and have a unique number repeated at 40 +/- 5 mm intervals along the entire length  
**Note.** The unique number repeat interval is to accommodate a range of current automated practices in preparing cross-match line segments (70 and 80 mm length) and will ensure that each segment has at least one readable number per segment.

**3 Labelling( including general label on plastic container)**

- 3.2 Blood collection systems shall be provided in bulk container boxes. These boxes must be of a size that is suitable for safe lifting by one person and must comply with the EC Directive on Manual Handling: Council Directive of 29<sup>th</sup> May 1990

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on the minimum health and safety requirements for the manual handling of loads where there is a risk particularly of back injury to workers.

- 3.3 Boxes shall carry Lot / Batch number in eye readable and internationally accepted barcode format. Note. ISBT 128 is acceptable.
- 3.4 The following information must be included in this section using symbols taken from recognized medical device standards (ISO 15223-1, ISO 3826-2 and EN 980)
- The anticoagulant or additive solution chemical formulation and its volume
  - Do not reuse this container (single use only)
  - Do not vent
  - Sterile fluid pathway
  - Pyrogen free fluid pathway
  - Do not use if there is any visible sign of deterioration
  - Contains phthalate (DEHP)

#### 4 Anticoagulant and Additive Solutions

- 4.2 Anticoagulants will be CPD based and must be approved for a minimum of 21 day storage of red cells at 2 – 6°C.
- 4.3 Collection system configurations containing an optimal additive solution must be approved for red cell storage for a minimum period of 42 days at 2 – 6°C.

#### 5 INSTRUCTIONS FOR USE

- 5.2 Detailed directions for use of blood collection systems must be included with each box of blood collection systems either as information on the label affixed to the over-package or provided on a separate sheet. Instructions for all integrated features such as needle guards and sample site couplers must also be included.
- 5.3 Instructions for leucodepletion must also be supplied and include the following information:
- Recommended hold period and temperature prior to filtration.
  - Acceptable filtration temperature range.
  - Recommended filtration (gravity) height or pressure
- 5.4 Instructions for use must be version controlled and changes notified by an appropriate means.
- 5.5 The expiration dates and delivery conditions should be clearly shown.

*Suppliers should provide all technical documents required in English Language.*

**NB:** The supplier commits to put all efforts towards reducing or stopping the use of diethylhexyl phthalate (DEHP).

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### V. Training Requirements

- The supplier shall provide **comprehensive technical training** for LRC-BTS technologists.
- Training shall cover:
  - System setup and use
  - Platelet pooling workflow
  - Leukoreduction filtration
  - Critical control points and troubleshooting
- Training shall continue until technologists are fully competent and confident in using the system and the full validation is completed and successful.

### VI. Submission Requirements

Suppliers shall submit:

- Technical datasheet and brochure
- Provision of free-of-charge samples for evaluation.
- Declaration of compliance with this TOR
- Warranty and after-sales service details
- Delivery timeline
- Financial quotation (clearly itemized)
- References from similar installations (if available)
- **Completed LRC BTS Supplier Qualification Form:** The official form must be fully completed, signed, and stamped.

### VII. Evaluation Criteria & Scoring

Any vendor failing to comply with **any technical, functional, or regulatory requirement** specified in this Terms of Reference shall be **directly excluded from the evaluation process**, and its offer shall **not proceed to financial evaluation**.

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