REFURBISHMENT OF EXISTING 1000kVA 11/0.433kV TRANSFORMER

BILL OF QUANTITIES & CONDITIONS OF BID

1. The bid price for the works shall be fixed lump sum in BND currency as stated in this Bill of Quantities.

2. The rates in these bills shall be deemed to include all costs for refurbishment works, repair, replacement of defective parts and/or accessories including quality assurance, packing, loading, unloading, and transportation to and from BPC Store in Berakas Power Company Sdn. Bhd as per below address using a certified lifting truck (Hiab).

   Berakas Power Company Sdn Bhd
   Berakas Power Station
   Lebuhraya Rimba / Jln Utama Terunjing
   Kg. Terunjing Baru
   Berakas BB1514
   Negara Brunei Darussalam

3. The intent of the Bill of Quantities (BQ) is not to provide an exhaustive list of equipment, materials, services or works description, but nonetheless the complete scope for refurbishment and the delivery of the transformer, whether or not specifically listed in the BQ.

4. The successful bidder shall undertake to complete the refurbishment works off-site at their workshop / facility and ensure delivery of the transformer in accordance with the agreed work schedule, commencing from the date of Purchase Order (PO) issued by BPC. The Bidder shall be responsible for the safe collection, transportation and storage, refurbishment, and return delivery of the transformer and adherence to all safety measure.

5. The Bidder is advised to visit BPC Store and inspect the existing transformer prior to submission of the Bid to fully understand the scope, condition, access, handling, and transportation requirements. For site visit coordination, Bidder to kindly liaise with Mr. Latif Dahlalan at +673 7163654.

6. If there are queries from this BQ or the specifications, the bidder must obtain a written clarification from BPC before submitting his bid; after bid submission, the scope is deemed to be confirmed and the bidder have satisfied himself as to the accuracy and completeness of his offer. Additional claims are not allowed post-award of the bid.

Item	Description	Unit	Qty.	Unit Rate BND	Amount BND
A	**Quotation for Refurbishment**				
1 1.1	**<u>Repair and repainting works</u>** The Bidder shall include, but not be limited to, the following works:				
	• Minor repairs to dents, scratches or surface defects on the transformer	Lot	1		
	• Cleaning and surface preparation (rust removal, cleaning etc)	Lot	1		
	• Complete re-painting of transformer as per attached *Painting Specifications*.	Lot	1		
	• Repair or replacement of damaged or defective components (i.e., gaskets, LV control cables etc.)	Lot	1		
2	**<u>Associated Electrical & Mechanical Works</u>** The Bidder shall include, but not be limited to, the following works:				

Item	Description	Unit	Qty.	Unit Rate BND	Amount BND
	• Supply and installation of removable cable gland plates (stainless steel or equivalent with a thickness of not less than 6mm) at the transformer HV and LV cable boxes, manufactured to suit the existing cable box cut-out dimensions complete with all necessary fixings (i.e. gaskets, bolts etc.,)	Lot	1		
	• Restoration of earthing terminals and bonding connections	Lot	1		
3 3.1	**Transformer Handling and Transportation** Collection of 1000kVA Transformer from BPC Store for refurbishment, transportation to and from the refurbishment facility, and return to BPC upon completion, including loading and offloading using certified HIAB with certified operator and banksman.	Lot	1		
				TOTAL AMOUNT OF BID (BND)	

Amount in words (BND)……..

……

……

Delivery Schedule (*Note: Bidder to state, assuming issuance of purchase order by **20th Feb 2026**)

BPC Required Delivery	Guaranteed Delivery Date
1st April 2026 (5 weeks)	

_____ (Signature and Company Stamp)

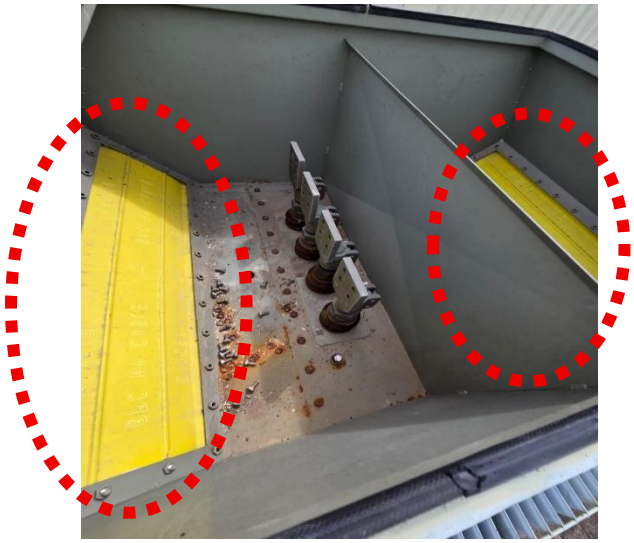
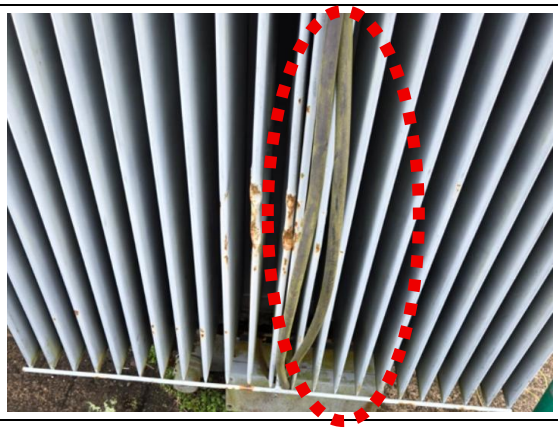
_____ (Contact mobile phone & Email)

_____ (Contact name)

_____ (Date)

Appendix A – Existing 1000kVA Transformer Conditions

No	Descriptions	Condition	Photo
1	Transformer		
a	Cable compartment box	Poor (faded)	
b	Tank	Poor (faded, rusty)	

No	Descriptions	Condition	Photo
c	Radiator	Poor (rusty, dent and faded)	 Note: Radiator fins show minor dents; however, the radiator is free from oil leaks. No oil leakage observed.
2	Accessories		
a	Cable gland plate at both LV and HV cable boxes	No proper glanding plate is available. Only covered with temporary yellow PVC protective tile.	
b	LV cable	Outer cable sheath is aged & faded	

SPECIFICATIONS

PAINTING OF ELECTRICAL EQUIPMENT

1.0 General

This Specification has been prepared for the use of BPC and by their Contractors as a reference document for the painting of BPS electrical equipment.

This Specification covers the minimum requirements of BPC as regards HSE, materials, personnel, surface preparation, coating application, testing and inspection requirements to be employed.

2.0 Surface Preparation

For maximum paint performance it is essential that surfaces to be painted or coated shall be adequately prepared. They shall be completely dry and free from burrs, rust, loose scale, dirt, dust, grease, oil and other foreign matter before any paint is applied.

2.1 Surface Preparation by Dry Blast Cleaning

Surface preparation shall preferably, for maximum coating performance reasons, be carried out by dry blast cleaning. Alternative surface preparation methods will be considered under the following minimum conditions:

- inaccessible areas
- When there is risk of damage to equipment, electrical components, small bore instrument piping, instrumentation, rotating equipment, etc., in the proximity to blasting operation. Every precaution shall be made to wrap equipment & electrical components to prevent the ingress of dust or grit during blasting.

  After the surface preparation of the substrate, any grit, dust, etc., shall be removed and a layer of primer applied before any detrimental corrosion or recontamination occurs, normally within 4 hours after dry blast cleaning.

2.2 Surface Preparation by Ultra High Pressure Water Cleaning (Optional)

Ultra-high pressure (UHP) water cleaning may be used for the removal of degraded paint or coating.

For UHP water cleaning, the Contractor shall submit a detailed proposal to BPC for review and approval. As a minimum, the proposal shall detail the followings:-

- The UHP water cleaning procedure including technical and HSE data of the equipment, accessories and consumables
- The type and concentration of any chemicals (eg. inhibitor) to be used
- The proposed paint/coating system to be used including technical/HSE data sheets and compatibility with existing paint, surface preparation method and inhibitor used.
- Safe handling and disposal procedures for both chemical and debris.
- Reference listing, independent test reports and performance records where this proposed system has been applied successfully.

At the discretion of the Company, the Contractor may be required to conduct a trial or demo to demonstrate the suitability of their proposal.

2.3 Surface Preparation by Manual/Power Tool Cleaning

Manual or power-tool cleaning shall only be utilised with prior written approval of BPC using a detailed procedure indicating specific areas intended for power tool cleaning, and the method used. It shall be confined to minor areas of coating damage that are to be repaired

Where the work areas cannot accommodate a power disc, power impact tools shall be applied (vibratory and rotary hammers, needle guns, chisels) followed by brush cleaning.

When manual or power-tool cleaning is allowed, the surface produced shall be left degreased and roughly abraded. The prepared surfaces shall never be left polished or burnished.

3.0 Painting and Coating Materials

The Contractor shall submit their detailed coating system proposals to BPC for prior review and approval. The Contractor shall demonstrate to the Company both the technical soundness and life-cycle cost effectiveness of their proposed paint systems. These proposals shall include:

- the coating system detailing the type of paints to be used including the surface preparation;
- repair method(s) and up-to-date Technical and Safety Data Sheets of the paints to be used
- independent test reports on testings conducted
- Reference listing and performance records of where the proposed paint systems has been applied successfully

4.0 Paint Materials, Storage and Handling

All material shall be supplied in the Manufacturer's original containers, durably and legibly marked with the description of the contents. This shall include the specification numbers, the colour reference numbers, the method of application for which it is intended, the batch numbers, dates of manufacture, the shelf-life expiry date and the Manufacturer's name or recognised trade mark.

The storage, handling and preparation of paints and other coating materials (eg. thinners) shall be in strict accordance with the Manufacturer's instructions. They shall be kept in a well ventilated and clean storage area.

Samples for testing the paint being used may be taken by the Company at any time. Should a sample fail to meet the required specification, the Contractor shall remove this paint from the equipment.

5.0 Paint Application

The paint shall be applied in accordance with the paint Manufacturer's product data sheet, which shall include the mix ratio, the method of application, the use of thinners and over-coating times.

Areas with inadequate coating thickness shall be thoroughly cleaned and abraded where necessary, and additional compatible coats shall be applied until they meet the required film thickness.

Unless specifically compatible with the coating system(s), painting shall not be performed under the following conditions:

- when the relative humidity of the air is greater than 85%.
- when the surface temperature is greater than 50 °C

- when there is the likelihood of an unfavourable change in weather conditions within two hours after painting
- when there is a deposition of moisture in the form of rain, condensation, etc., on the surface,
- when the available lighting is deemed to be insufficient for painting to proceed.

If condensation, rain, dust or other foreign materials contaminate the surface of a paint coating which is not dry to the touch, the paint shall be removed, the surface re-cleaned and fresh paint applied.

Extra coats of paint shall be applied on the areas where the shape and/or plane of application result in thinly applied coatings, e.g. at edges, welds, corners etc. To compensate for these effects, stripe coats of paints shall be applied (normally applied first so that they will be covered by the full coat).

The first coat of paint shall be applied within 4 hours after surface preparation, before significant rusting or contamination occurs.

Each layer of paint shall be allowed to dry/cure for a period of time within the limits prescribed by the paint manufacture before the next layer is applied. Subsequent layers of the paint system shall have a difference in tint or colour with the topcoat matching the required colour scheme (eg. yellow for structural items).

Dry Film Thickness - The specified minimum dry film thickness shall not be exceeded by more than 50%, with the exception of areas such as welds, crevices, etc., where such a requirement is not practical.

5.1 Spray Application

Airless or pneumatic spray applications are the preferred method of application.

The correct spray tips, air pressures, etc. as recommended by the equipment and paint manufacturers shall be strictly followed. These equipment and fittings shall be properly cleaned and maintained for the painting activities.

Each spray coat shall overlap the previous pass, large surfaces shall always receive passes in two directions at right angles to each other. Each coat shall be applied uniformly and completely over the entire surface. All runs and sags shall be brushed out immediately or the paint shall be removed and the surface be re-sprayed.

Stripe Coating - Before spraying each coat, all areas such as corners, edges, welds, small brackets, bolts, nuts and crevices shall be pre-coated by brush to ensure that these areas have at least the minimum specified dry-film thickness.

5.2 Brush Application

Brush application may be used under the following circumstances:

- when areas cannot be properly coated by spraying for any reason
- above ground level when it is considered that loss of paint under prevailing conditions is excessive and progress of work has to be maintained and personnel in or near the work site or plant or equipment property, may be affected by spray particles
- for ‘touch-up’ or repairs to localized damaged paint or areas of incorrectly applied paint.
- For applying stripe coats of paint to corners, edges, crevices, holes, welds or other irregular surfaces prior to spray application.
- Brushes used in brush application shall be of a style and quality that will permit proper application of paint.

Brush painting shall be done in two passes that are perpendicular to each other such that a smooth coat, as nearly uniform in thickness as possible, is obtained. There shall be no deep or detrimental brush marks. Paint shall be worked into all crevices and corners. Runs and sags shall be brushed out.

Proper cleaning, drying, handling and storage of the paint brushes are essential after each painting activities. Thinners and cleaning solvents used shall be 100% compatible with the type and brand of paints used.

Painting by roller application shall not be used.

6.0 Colour Scheme

The final coat of a coating system shall be of a colour in accordance with the original colour scheme of the equipment to be painted.

The RAL – colour system shall be used to define the required paint colour finishes.

7.0 Repair of Coating Defects

The Contractor shall submit repair procedures for Company approval prior to the works being performed.

Before application of any coat of material, all damages to previous coat shall be repaired. All loose paint shall be removed to a firm and feathered edge. All surface irregularities and contaminants shall be removed. These surfaces may require abrading to obtain a suitable surface for painting.

8.0 Inspection and Testing

Before any painting activities commence the Contractor shall submit an inspection procedure report indicating inspections and tests to be conducted during preparation and application of the paint system for approval by the Company.
The Coating Inspector(s) employed by the Contractor shall have minimum of 3 years working experience in the painting and coating discipline.

The following minimum coating inspections and tests shall apply:

a) Surface Contamination .Tests indicating the extent of substrate contamination

b) Temperature and Relative Humidity. The temperatures of the atmosphere and the substrate shall be measured using a calibrated thermometer. The relative humidity shall also be measured in order to determine the dew point temperature of the substrate. These measurements shall be repeated regularly within each daily shifts and particularly with changes in painting and/or weather conditions. For these measurements, a calibrated temperature gauge (eg. Elcometer-113 or 213) and a calibrated relative humidity hygrometer (eg. Elcometer-116 or 117) shall be used.

c) Wet/Dry Film Thickness. Regular spot checks shall be carried out during the course of the painting operation to ensure that film thickness is being maintained.

For maintenance painting onto existing paint coating, the minimum pull-off value of the repainted surfaces shall be 1.4 Mpa (200 psi) or 90% of the original existing paint coating adhesion values. At the discretion of the Company, this minimum pull-off value(s) may be changed on a case by case painting basis

8.1 Inspection Records and Reports

During the work, daily reports shall be prepared and retained by the Contractor, giving details on weather conditions, particulars of application, e.g. surface preparation, number of coats applied, type of materials applied, testing and inspection results required by this specification

BPC shall have the right to inspect the paint work at all stages of preparation and to reject any tools, instruments, materials, equipment or work which do not conform to the minimum requirements of this Specification.

At the discretion of the Company random paint samples may be taken for analysis and check against the paint specification.

Prior to final acceptance of the paint work an inspection shall be made. The Contractor and the Company shall both be represented and they shall sign an agreed inspection report.

These reports shall include as a minimum:

a) General
- Names of the Contractor and the responsible personnel.
- Dates when work was carried out.

b) Materials preparation
- Equipment and techniques used.
- Materials receipt condition.
- Type and calibration of instruments used.

c) Environmental conditions
- Weather and ambient conditions.
- Painting periods

d) Surface preparation
- Condition of surface before preparation.
- Tools and methods used to prepare surface.
- Condition after preparation.

e) Paints and painting
- Information on systems being applied.
- Mixing and testing prior to application.
- Paint application techniques.

f) Testing
- Type of quality control checks carried out, and results.
- Compliance or otherwise with specification.

9.0 Health, Safety and Environment

Prior to start of painting work, the painting Contractor shall submit for BPC approval their detailed Risk Assessment and Method Statement (RAMS).

All relevant requirements of BPC shall be met. Of particular importance are the requirements for dry/wet blasting and power tool cleaning and for scaffolding access platform. Environmental pollution, e.g., lead concentration in the air and ground associated with blast cleaning of existing lead/chromate containing paints, shall be controlled.

The recommendation for personal protection and for protective equipment shall be followed.

Spray guns and accessories shall be properly maintained, operated and earthed to prevent them from building up an electrostatic charge by the movement of paint.

Storage, handling, mixing, and application of the paints and coating materials shall be done strictly in accordance with manufacturers' recommended procedures and hardware of assurance of personal safety. Safety precautions shall be clearly described on the technical data sheets of paints and coating materials supplied, as well as on the paint containers.

Lead containing paints, coal-tar containing epoxy and/or urethane paints shall not be used because of the associated health and environmental concerns.

Paints and other coatings specified in this Specification shall not contain any components which are considered to be carcinogenic or toxic (eg. isocyanates) which can be released during application, in service or during removal.

Statutory requirements for levels of VOCs (volatile organic compounds) are to be met. Current UK Regulations are covered by the Environmental Protection Acts 1990.

10.0 Painting Contractor Responsibilities

The painting Contractor shall be responsible for:

- Their quality of workmanship, which shall be performed in accordance with this Specification and all other relevant documents such as site regulations, safety rules, referred standards and codes, etc. Deviation shall not be allowed unless duly authorized in writing by BPC.
- The protection of all equipment, structures and any other areas from eg. mechanical damage, environmental damage, paint droppings, or overspray.
- Earthing of all painting and electrical equipment and accessories.
- Taking all necessary precautions to avoid or minimise interference with the execution of other contractors' work in the affected vicinity.
- Maintenance of their painted works until completion of the contract. This shall include the repair of any damages.
- The characteristics and performance of their paints and paint materials obtained from the paint Manufacturer. The characteristics shall be obtained via the provision of separate technical, and health and safety data sheets.
- Provision of all painting, thinning and cleaning materials, tools, site accommodation, transport services, and competent supervision, necessary for the satisfactory completion of the works.
- Use of qualified surface preparation operators (eg. blast clean, power or hand tool clean and UHP water clean) and qualified painters. The Contractor shall conduct necessary trade tests to qualify their surface prep. operators and painters
- The calibration of all inspection and test equipment/tools shall be in accordance with the manufacturers' recommendations.
- Control and safe disposal of waste resulting from the Contractor's painting and coating activities, in accordance with site regulations and specific contract requirements.
- Maintaining all facilities, tools and equipment in a good, clean and operatable condition. Spray guns, brushes, mini blast pots, paint pots and the like shall be regularly cleaned and shall be suitable for their purpose.
- The supply of all necessary equipment and weather protection for the painting works.
- The storage and preparation of paints and other coating materials shall be in accordance with the manufacturer's instructions.

PAINTING PROCEDURE QUALIFICATION

Before commencing on the painting, the Contractor shall submit his painting procedure to BPC for approval and qualification testing. Only Contractor's qualified painting procedures shall be applied.

The qualification of a painting procedure shall involve:

- Submission by the Contractor of a written painting procedure for BPC's approval. The procedure shall state the coating system, the paint manufacturer, the paint technical and HSE data sheets, the standard of surface preparation, the application techniques, the equipment involved, and the methods of inspection.
- The Contractor shall also submit independent test reports, reference listings and performance reports to demonstrate where this proposed paint system has been used successfully within other similar industrial companies.
- Upon approval of the written painting procedure and at the discretion of the Company, a procedural qualification test shall be conducted by the Contractor (at their own cost), following the written procedure and using the specified contractors equipment, and simulating as close as practical the anticipated prevailing conditions during actual painting job.

VENDORS EQUIPMENT

(For carbon steel substrate temperature below 120°C)

Scope

Coating for vendor supplied equipment, covering complete manufactured and painted/coated equipment items and packages, such as:

- Pumps, motor
- Compressor, turbine generator packages
- Electrical equipment, switchgear cabinets
- Instruments, instruments panel and supports

Surface Preparation

Blast clean to a visual standard of ISO-8501-1
Surface Amplitude : 50 – 75 microns
Where blast cleaning is not feasible, power tool cleaning to ISO-8501-2

Coating System

	MDFT
One Coat Zinc Phosphate Epoxy Primer	50 microns
One Coat Micaceous Iron Oxide Epoxy Paint	150 microns
One Coat Recoatable Polyurethane Paint	50 microns
Total minimum dry film thickness :	250 microns

Note :

Powder coating systems and baked-on coatings (epoxies, phenolic) may be accepted typically for panels, cabinets, instruments, provided total dry film thickness is minimum 200 microns.

COATING FOR NON-METALLIC MATERIALS

Scope

For glass fibre reinforced plastics (GRP) and plastic substrates (eg. GRE or PVC piping or structural handrails) where an external coating system is specified.

Surface Preparation

Clean surface to be painted with a detergent solution (e.g., Teepol).

Roughen and abrade the surface with clean and fine sandpaper (e.g., type no 400)

Coating System

	MDFT
For GRE and GRP substrates	
One Coat Polyamide-Cured Epoxy	100 microns
One Coat Recoatable Polyurethane	50 microns
Total minimum dry film thickness :	150 microns
For PVC substrates	
Two Coats of alkyd based paint @ 40 microns per coat	80 microns