

JABATAN KERJA RAYA MALAYSIA

**PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI
KEM PULMAT TAIPING, PERAK (TAWARAN SEMULA)**

SENARAI KUANTITI

Kami seperti nama syarikat di bawah mengesahkan tawaran harga yang tersenarai di dalam senarai kuantiti ini adalah sama sepertimana di dalam Borang Tender yang dihasilkan di dalam sistem dan sebarang percanggahan akan menyebabkan tawaran kami ditolak.

- A. Nama Syarikat: **Nama Petender**
- B. CIDB/UPKJ/PUKONSA No.: **No.Pendaftaran Petender**
- C. Harga Tawaran: **Harga Tawaran Petender**
- D. No. Siri Tender: **JKR PERAK BIL.5/2024**
- E. Tarikh Cipta Senarai Kuantiti: **21-10-24**

Senarai kuantiti ini dikeluarkan oleh BAHAGIAN KONTRAK DAN UKUR BAHAN JKR PERAK. Sebarang pertanyaan boleh berhubung dengan pegawai yang menyediakan tender dan maklumat pegawai untuk dihubungi boleh didapati di laman iklan.

JABATAN KERJA RAYA MALAYSIA

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK (TAWARAN SEMULA)

SENARAI KUANTITI

No. Tender: JKR PERAK BIL.5/2024

RINGKASAN TENDER**PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM
PULMAT TAIPING, PERAK (TAWARAN SEMULA)**

ITEM	DESCRIPTION	PAGE NO.	AMOUNT(RM)
		RT/1	
BILL A	PRELIMINARIES	BILL A/1/1	
BILL B	SUB STATION BUILDING	BILL B/1/1	
BILL C	EXTERNAL WORKS	BILL C/1/1	
BILL D	MEDIUM VOLTAGE 11kv SYSTEM	BILL D/1/1	
BILL E	LOW VOLTAGE SYSTEM	BILL E/1/1	
BILL F	MISCELLANEOUS	BILL F/1/1	
BILL G	PROVISIONAL SUM	BILL G/1/1	
Jumlah di bawa ke Borang Tender			-

RT/1

BILL A - PRELIMINARIES

ITEM	DESCRIPTION
1.0	GENERAL INFORMATION ON DRAWINGS AND SPECIFICATIONS
1.1	GENERAL
1.1	The Works contained in the Contract shall include the provision of all labour, materials, constructional plant, temporary or permanent works as required in the Contract.
1.2	The Bill Of Quantities shall be read in conjunction with the Conditions of Contract, the Specification and the Drawings in the Contract Documents.
1.3	The items set out in the Bill Of Quantities shall apply to the whole of the Works contained in the Contract and the Contractor shall allow for compliance with the same and for any cost incurred in connection therewith.
1.4	Headings are not comprehensive and do not necessarily reflect or modify the meaning of the items in the B.Q. The exact nature and extent of the work to be carried out shall be ascertained by reference to the Contract as a whole, in particular the Conditions of Contract, the Specification and the drawings. It shall be read together with the relevant "Method of Payment".
1.5	The amounts inserted by the Contractor for such items shall be deemed to apply to the whole of the Works carried out under this Contract.
1.6	Each item shall be individually priced. Bulk pricing for sections, trades, groups or pages of items shall not be allowed and no subsequent claims for loss or expense and/or profit shall be entertained for failure to comply with this clause.
1.7	The rates and prices inserted in the Bill of Quantities shall include cost of the works described, all risks, liabilities and obligations set forth or implied in the Contract Document and shall be deemed to include the following, unless expressly stated otherwise : (a) the provision of labour and all costs in connection therewith; (b) the supply of materials, goods, equipment and storage thereof including delivery to site and all costs in connection therewith; (c) taking delivery of materials, goods and equipment necessary for the Works and including those supplied by others, loading and unloading, storage and all costs in connection therewith; (d) the usage of plants and machineries and all costs in connection therewith; (e) the fixing, erecting and installing or placing in position of materials, goods and equipment including around obstruction, tolerances, penetration , working space, over-breaks etc. and all costs in connection therewith; (f) the provision of all temporary works and all costs in connection therewith unless separately provided for in the Bill of Quantities;

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK
(TAWARAN SEMULA)

BILL A - PRELIMINARIES

ITEM	DESCRIPTION
	(g) the phasing requirements of the Works including the effect on the programming of the Works of all traffic and drainage diversions, special structural requirements, earthwork restrictions, alterations to services and street lighting (executed under the Contract or in conjunction with it) and all other requirements of the Contract and all cost in connection therewith; (h) all cost of testing to show proof of compliance with the Specification on materials and workmanship inclusive of samples of materials and submission of tests results. Should the frequency of testing and sampling not specified, then it shall be in accordance with the relevant Malaysian/British Standards and Codes of Practice. Where there is no such relevant Standards and Codes of Practice for reference, it shall then be as by the S.O.; (i) all royalties and dues which the Contractor may be required to pay ; (j) wastage; (k) establishment charges, overheads and profit; (l) whatsoever method of construction the Contractor may adopt.
1.8	Where any priced item in the B.Q. but has not been executed on site by the Contractor, the cost of such priced item shall accordingly be deducted from the Contract Sum.
1.9	All items priced shall be deemed to include compliance with the provisions of the contract, statutes, regulation, by-laws or any order or directive issued by public authority or public service company and other related legislation currently in force.
2.0	MEASUREMENT
2.1	Quantities in the Bill of Quantities if any are measured in accordance with the Malaysian Standard Method of Measurement of Building Works (2nd Edition Metric 2000). Where departure have been made from the standards mentioned, the method adopted in the Bill shall be adhered to for the purposes of ascertaining the value of all variations and measurements.
3.0	UNPRICED ITEMS
3.1	Where any item is left unpriced, it shall be deemed that the cost of such item has been allowed for elsewhere within this document. No subsequent claims arising out of expense and/or loss incurred against such unpriced item shall be entertained.

BILL A - PRELIMINARIES

ITEM	DESCRIPTION
4.0	GENERAL ATTENDANCE FOR NOMINATED SUB-CONTRACTORS AND NOMINATED SUPPLIERS
4.1	Attendance and facilities for Nominated Sub-contractors and nominated suppliers shall include : (a) in the case of works or services executed : for allowing the use of existing working space, access , temporary roads erected scaffolding, sanitary, welfare and other facilities existing on Site and the provision of protection, water, electricity for lighting and clearing away rubbish and debris arising from the work; (b) in the case of goods, materials or services supplied: for taking delivery, unloading, storing, protection and returning crates, cartons and packing materials, all as specified in the specification
5.0	PHASING SEQUENCE OF OPERATIONS AND METHODS OF CONSTRUCTION
5.1	The rates and prices shall, unless otherwise stated, include for the costs of compliance with any restrictions imposed on the programming of the Works by the Government and Local Authorities and other relevant authorities dealing with phasing sequence of operations, method of construction, safety and health and liaison and access.
6.0	TRIALS, SAMPLES, TESTS AND INSPECTION
6.1	The rates and prices shall include for a testing laboratory or an accredited laboratory approved by SIRIM, equipment and staff for carrying out the tests, tests and the effects on the progress of the Works for the carrying out of all trials, sampling and tests whether specified in the Contract Document or otherwise in order to ensure compliance with the requirements of the Specification except where separately itemised in the Bill of Quantities.
7.0	EXISTING SERVICES AND MAINS
7.1	The Contractor shall include in his rates and prices for taking measures to locate the actual position and provide support and full protection of existing services and mains and other equipment and machinaries during the progress of the Works. The Contractor shall inform the S.O. of all arrangements with all Statutory and Public Utility Authorities.
8.0	WORK UNDER WATER
8.1	The rates shall include any costs arising from and in connection with the execution of work under water wherever required unless otherwise stated.

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK
(TAWARAN SEMULA)

BILL A - PRELIMINARIES

ITEM	DESCRIPTION
9.0	PHRASEOLOGY
9.1	Differences in the method of billing and in phraseology used in various parts of the Bill of Quantities and/or Schedule of Rates shall not be a basis of any claim for an increase in the rates and prices.
10.0	PROVISIONAL SUMS
10.1	All provisional sums included in the summary of tender are intended to be approximate indications only of the amounts to be expended in respect of the work described and may be omitted entirely or substantially varied without entitling the Contractor to any claim for compensation. No part of the Contractor's overhead, expenses or profit should be included in these sums when the bill is priced unless items for profit and attendance are specifically allowed for.
11.0	CURRENCY OF PAYMENT
11.1	Pricing of the Contract shall be in Malaysian Ringgit to two decimal place. Payment to the Contractor under the Contract shall be in Malaysian Ringgit.
12.0	TEMPORARY DIVERSIONS
12.1	Work in connection with the temporary diversion and relocation of existing overhead and underground services , whether detailed in the Contract or not shall be covered by the appropriate Lump Sum Items in Bill No.1 : Preliminaries and General Conditions unless separately measured in other parts of the Bill of Quantities.
13.0	ABBREVIATIONS
	a) mm : milimetre b) m : metre c) m ² : square metre d) m ³ : cubic metre e) kg : kilogramme f) tonne : metric ton g) No. : Number h) L.S : Lump Sum i) P.C.Sum : Prime Cost Sum j) P.S. : Provisional Sum k) RM : Ringgit Malaysia

BILL A - PRELIMINARIES

ITEM	DESCRIPTION
14.0 14.1	SCOPE OF WORKS The works included under this Contract comprises : a) PRELIMINARIES AND GENERAL CONDITIONS b) SUBSTATION BUILDING c) EXTERNAL WORKS d) MEDIUM VOLTAGE 11KV SYSTEM e) LOW VOLTAGE SYSTEM f) MISCELLANEOUS g) PROVISIONAL SUM
15.0	LOCATION OF SITE The site for the proposed Works is located at KEM PULMAT TAIPING, PERAK as shown on Drawing

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK
(TAWARAN SEMULA)

BILL A - PRELIMINARIES

ITEM	DESCRIPTION	AMOUNT (RM)
A	Project Signboard The Contractor shall provide, erect, and maintain a project signboard as directed by the S.O.. The signboard shall be erected at a prominent position at the Site as approved by the S.O.	
B	Site Survey and Setting Out The Contractor shall employ a licensed surveyor to carry out site surveys before commencement and setting out of the Works	
C	For the purpose of complying with Tenaga Nasional Berhad's (TNB) requirement, the Contractor shall prepare 15 sets of pre-computation plan which comprised of the survey plan for the TNB Substation. The said pre-computation plan shall be based on the overall certified survey plan by a Licensed Land Surveyor engaged by the Contractor for the project (measured separately). The pre-computation plan shall be prepared and certified by a Licensed Land Surveyor engaged by the Contractor and submitted to the S.O. for approval.	
D	Temporary Diversion And Relocation Of Existing Overhead And Underground Services The Contractor shall enquire from the various authorities and make arrangements for the disconnection, removal, relocation and reconnection of services and pay all necessary cost and fees in connection therewith and make good all damage as specified.	
E	Construction Plan The Contractor shall submit to the S.O. for his approval the following as specified : a) Program of Works b) Methods statement c) Contractor's Organisation Chart d) Schedule e) Quality Assurance Plan for Works Contract worth RM10 Million and above i) Provide a quality Assurance Team full time on Site for the institution, administration and maintenance of the Quality Assurance Plan and the preparation and submission of all Quality Assurance Reports as specified, throughout the duration of the contract. ii) The Contractor shall appoint a suitably qualified and experienced person to act solely as a Quality Assurance Officer full time on site to lead Quality Assurance Team.	
F	Contractor's Plant The Contractor shall provide, erect, keep insured, maintain and remove on completion all requisite scaffolding, hoist, crane, construction plant, ladder, staging, tarpaulins, tools, vehicles, tackles and other plants and apparatus (excluding piling and pile testing equipment), as necessary for the execution of the Works as specified.	
G	Temporary Water And Power Supplies For The Works The Contractor shall provide adequate power and water supplies for the execution of the works including paying all associated costs and fees as specified. The bill shall be paid under the name of "Ketua Setiausaha Kementerian Pertahanan" and in form of Bank Draft or Money Order to Unit Pengurusan Utiliti Zon Utara 1, MSS Taiping office.	
	To collection	

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK (TAWARAN SEMULA)

BILL A - PRELIMINARIES

ITEM	DESCRIPTION	AMOUNT (RM)
	Site Security	
A	The Contractor shall provide all necessary personnel and lighting for the security of the site at all times until completion of the whole Works as specified.	
	Temporary Access And Maintenance of Existing Roads	
B	The Contractor shall provide and maintain all necessary temporary roads, culverts, tracks, bridges, et cetera for access to and within the Site as specified in addendum spec	
C	The Contractor shall maintain all access including existing roads, bridges, drains, culverts, roadside furniture, and all other appurtenances and services on such roads throughout the construction period. The Contractor shall make good any above mentioned item damaged by any work carried out by him.	
D	The Contractor shall reinstate the same to their original condition to the satisfaction of S.O and provide support and full protection of existing services and mains during the progress of the Works. The Contractor shall inform the S.O. of all arrangements with the various authorities.	
	Control Of Workmen, Plant And Machinery At Site	
E	The Contractor shall ensure the safety, health and welfare at work of all his workmen as specified.	
	Contractor's Temporary Accommodation And Facilities For Workmen Living On Site	
F	The Contractor shall provide and maintain all temporary accommodation and facilities including all necessary facilities and services for water supply, drainage, sanitation and lighting for his staff as specified.	
	Contractor's Office And Storage	
G	The Contractor shall provide and maintain Contractor's office and storage on the Site in positions as approved by the S.O. and as specified.	
	Care And Protection Of Materials And Works	
H	The Contractor shall provide and maintain everything necessary for proper protection of materials and Works from any damage by weather, carelessness or otherwise. Any damage caused shall be made good at the Contractor's own cost to the approval of the S.O.	
	Shop Drawings, Samples And Mock-ups	
J	The Contractor shall submit relevant shop drawings, samples of materials or workmanship and mock-ups units, manufacturer's specifications, et cetera for the S.O's approval as specified.	
	To collection	

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK
(TAWARAN SEMULA)

BILL A - PRELIMINARIES

ITEM	DESCRIPTION	AMOUNT (RM)
A	Progress Photographs The Contractor shall take progress photographs and submit to the S.O. as specified.	
B	Material Testing Laboratory And Staff The Contractor shall provide/erect a testing laboratory within the site or rent a premise or propose an accredited laboratory approved by SIRIM or accredited by the Department of Standard Malaysia (JSM). The laboratory shall be equipped with the necessary equipment and staff required to carry out the tests as identified in APPENDIX A/4 (List of Laboratory Equipment).	
C	Office Accommodation For S.O. The Contractor shall provide and maintain a site office or relocatable site office or rent a premise for the use of the JKR supervisory staff which shall meet the requirement of the JKR design as specified.	
D	Telephone For S.O. The Contractor shall provide a permanent telephone at the S.O.'s site office for the sole use of the S.O. and his representatives as specified.	
E	Survey Instruments And Personnel The Contractor shall provide all such instruments, equipment and survey personnel as specified until (30) days after the issuance of the Certificate of Practical Completion as per SO required.	
F	Site Items For S.O./ Office Equipment And Facilities The Contractor shall provide all Personnel Protective Equipment required for the use of the S.O. and his supervisory staff complete as specified and complying with DOSH requirements as APPENDIX A/1A	
G	The Contractor shall provide suitable types of fire extinguishers as specified.	
H	The Contractor shall provide the equipment and facilities as listed as specified in APPENDIX A/2 for the use of the S.O., his representatives and staff throughout the duration of the original Contract Period.	
J	The Contractor shall provide suitable transportation service by means of vehicle (s) including licensed and competent driver(s) as specified in APPENDIX A/3 throughout the duration of the original Contract Period.	
	To collection	

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK
(TAWARAN SEMULA)

BILL A - PRELIMINARIES

ITEM	DESCRIPTION	AMOUNT (RM)
A	Safe Working Area The Contractor shall supply, erect, maintain and remove on completion of the Works, scaffolding and working platform with safety nettings, catch platforms, safety barricades, fencing, railing, screen wire netting and toe board, guardrails or board fences and sufficient illuminations, all as specified.	
B	The Contractor shall supply, erect, maintain and remove on completion of the Works, adequate, protective and security hoarding, scaffolding and working platform with safety nettings and such other safety measures necessary to ensure the safety of the workers, personnel, public and others at or within the vicinity of the Site, all as specified.	
C	Safety, Health And Welfare The Contractor shall ensure the safety, health and welfare at work site as specified including but not limited to : a) Provision Of First Aid Kit b) Pest control including keeping the site clean and dry to prevent breeding of mosquitoes, rodents, insects and vermin of any kind. c) Fogging at regular intervals	
D	*The Contractor shall employ a Safety and Health Officer (SHO) registered with DOSH for the entire contract period to be stationed fulltime at the site (for works exceeding RM 20 million oncontract value). <i>*Delete if not applicable</i>	
E	The Contractor shall employ a Site Safety Supervisor (SSS) registered with DOSH to be stationed a minimum 15 hours a week at the site for the entire duration of the construction period.	
F	The Contractor shall submit 5 copies of Safety and Health Plan (S-Plan) as required in APPENDIX A/5 as specified.	
G	The Contractor shall submit 5 copies of monthly Safety and Health Report as required in APPENDIX A/6 as specified.	
H	The Contractor shall provide and maintain adequate traffic safety and control including signanges, warning lights and flagmen as necessary.	
J	Keeping The Site Tidy The Contractor shall make every effort to keep the Site in a reasonably clean and tidy condition for the duration of the Works as specified.	
	To collection	

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK
(TAWARAN SEMULA)

BILL A - PRELIMINARIES

ITEM	DESCRIPTION	AMOUNT (RM)								
A	Coordination Of Mechanical And Electrical (M & E) Services The Contractor shall be responsible for coordinating the implementation of all M & E works as specified and appoint M&E Services Coordinator based on project cost as follows : <table><tr><td>Project Cost (RM)</td><td>Minimum Requirement Of M & E Coordinator</td></tr><tr><td>Below 10 million</td><td>1 CoW</td></tr><tr><td>Between 10 to 50 million</td><td>1 Engineer & 2 CoW</td></tr><tr><td>more than 50 million</td><td>1 Engineer & 2 CoW</td></tr></table>	Project Cost (RM)	Minimum Requirement Of M & E Coordinator	Below 10 million	1 CoW	Between 10 to 50 million	1 Engineer & 2 CoW	more than 50 million	1 Engineer & 2 CoW	
Project Cost (RM)	Minimum Requirement Of M & E Coordinator									
Below 10 million	1 CoW									
Between 10 to 50 million	1 Engineer & 2 CoW									
more than 50 million	1 Engineer & 2 CoW									
B	As-Built Drawings and Documentation Pursuant to the terms of the contract, the Contractor shall provide approved As-built drawings as follows: i. Four (4) sets of As-built drawings as actually constructed pertaining to the works including all services and facilities systems and all supporting documents such as Operation and Maintenance Manual, Testing and Commissioning Certificates ii. Four (4) sets of Digital Copies in AutoCAD (.dwg) or any other compatible format to be stored in compact discs or removable storage; and iii. Four (4) sets of Digital Copies in Acrobat (.pdf) format to be stored in Compact discs or removable storage. The As-built documentation and drawings supplied shall be submitted by the Contractor to the satisfaction of the S.O as to allow for a complete understanding of the Works as they were actually built.									
C	Clearing, Cleaning And Making Good On Completion The Contractor shall clear and clean the Works including existing roads, drains bounding the Site of any debris, earth, et cetera, and make good all damages upon completion as specified.									
	To collection									

BILL A - PRELIMINARIES

ITEM	DESCRIPTION	AMOUNT (RM)
A	Official Visit to Overseas a) To provide and manage official visit programmes for a maximum of three (3) numbers of Government's Official/Personnel (including one (1) technical officer to attend and/or conduct Pre Delivery Inspection, factory Evaluation Test, Project Monitoring Report, Executive Reporting Meeting, Final Acceptance Test, Transfer of Title or Training at the country where the product is manufactured or/and where the programmes will be held inclusive all the related allowance and necessary expenditure for the Government's Official/Personnel throughout the programme as follows: i. Meals Allowance; ii. Transportation Cost; iii. Accommodation Cost; and iv. Other allowance claimable by the Government's Official/Personnel as per PP/WP 1.4	
B	b) The list and ranks of the Government's Official/Personnel for the official visit programme are as follows: i. Jawatan Utama Sektor Awam (JUSA) (..... no.)*; ii. J54 (..... no.)*; iii. J52 (..... no.)*; iv. J48 (..... no.)*; v. J41 (..... no.)*; vi. JA 29.....; * and vii.,*	
C	c) The duration for the official visit for Pre-Delivery Inspection, factory-Evaluation Test, Project Monitoring Report, Executive Reporting Meeting, Final Acceptance Test, Transfer of Title or Training* shall not exceed seven (7) days (not inclusive of the travelling days).	
D	d) The duration of the official visit for Training are** Days (not inclusive of the travelling days).	
E	e) The Contractor shall provide all the receipts/ invoice or other relevance documentation for the assessment of the S.O. before any payment will be made to the Contractor for the expenditures made for the official visit to the overseas programme.	
F	f) If the sum priced in this item is not used either wholly or in part, the S.O. reserved the rights to deduct the amount from the Contract Sum. * Delete if not applicable ** Insert number of days	
	To collection	

BILL A - PRELIMINARIES

ITEM	DESCRIPTION	AMOUNT (RM)
A	Form of Contract The Contractor shall refer to the Standard Form of Contract for further information. The Contractor may price here for all the expenses involved in complying with the terms of these Clauses, otherwise such expenses are deemed to be included elsewhere	
B	<u>Clause No. 13 - Performance Bond/Performance Guarantee Sum</u> Performance Bond For due observance and performance of this contract the Contractor shall have to provide: i. Performance Bond in the form of an approved Bank or Insurance Guarantee equal to five percent (5%) of the contract sum to be deposited with the Government as a condition precedent to the commencement of any work under this contract. ii. The Performance Bond shall remain valid and effective for the duration as specified in the Contract. <u>Clause No. 15</u>	
C	<u>Clause No. 16</u> Insurance Against Personnel Injuries And Damaged To Property	
D	<u>Clause No. 17</u> Indemnities to Government in Respect of Claim by Workmen	
E	<u>Clause No. 18</u> Employees' Social Security Act, 1969	
F	<u>Clause No. 22</u> Insurance of Works	
G	<u>Clause No.35</u> Design, Sub-clause No.22.2 - Design Guarantee Bond Design Guarantee Bond substantially in the form of Bank Guarantee Design Guarantee Bond (PWD DGB 1/2011) appended in the Tender	
H	<u>Clause No.59 - Site Agent And Assistants</u> Materials, Goods And Workmanship - opening up work for inspection or testing of materials or goods	
J	The Contractor shall keep constantly on the Site for the full duration of the Contract a competent, efficient, suitably qualified, experienced and good character Site Agent and his assistants in each trade as may be necessary, who must be capable of receiving instructions in Bahasa Malaysia, and in default it shall be the responsibility of the Contractor to provide replacement for them and all wages and other expenses in connection with the employment of such replacement site agent and assistants. Any directions, explanations or instructions given to such site agent by the S.O. shall be deemed to have been given to the Contractor under this contract provide all necessary superintending order.	
	To collection	

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK
(TAWARAN SEMULA)

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
	COLLECTION FROM PAGE A /6 FROM PAGE A /7 FROM PAGE A /8 FROM PAGE A /9 FROM PAGE A /10 FROM PAGE A /11 FROM PAGE A /12				
PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK (TAWARAN SEMULA)				To "Ringkasan Tender"	

APPENDIX A/1**LEGISLATION AND REGULATIONS**

1. BS 5228: Code of Practice for Noise control on Construction and Demolition Site
2. Construction Industry Development Board Act, 1994
3. Electricity Regulations, 1994
4. Electricity Supply Act, 1990
5. Environmental Quality Act (EQA), 1974
6. Explosives Act, 1957
7. Factory and Machinery Act (FMA), 1967 Rev 2006 and Regulations under the Act.
8. Federal Territory (Planning) Act 1982 (Act 267)
9. Fire Services Act, 1988
10. Forestry Act 1984 (Act 313)
11. Guidelines For Hazard Identification, Risk Assessment And Risk Control, 2008, DOSH
12. Guidelines for Public Safety and Health at Construction Sites, 2007, DOSH
13. Guidelines for the Prevention of Falls at Workplaces, 2007, DOSH
14. Guidelines On Occupational Safety And Health In Tunnel Construction, 1998, DOSH
15. Guidelines on Occupational Vibration, 2003, DOSH
16. Industry Code of Practice for Safe Working in A Confined Space, 2010, DOSH
17. Irrigation Areas Act, 1953
18. Land Conservation Act 1960 (Act 385)
19. Local Government Act, 1976
20. MS 2318: Code of Practice for Demolition of Buildings, 2010
21. National Land Code (Act 56 of 1965)
22. Occupational Safety and Health Act (OSHA), 1994 and Regulations under the Act.
23. Protection of Wildlife Act, 1972 (Act 76)
24. Solid Waste and Public Cleansing Management Act 2007 (Act 672)
25. Standard OHSAS 18001
26. Street, Drainage and Building Act, 1974
27. Street, Drainage and Building Act, 1974: Act 133 and Amendment, 1978
28. The Radiation Protection (Basic Safety Standards) Regulations 1987
29. Town and Country Planning Act 1976, (Act 172)
30. Uniform Building By-Law (UBBL), 1984
31. Workers Minimum Amenities Act 1990 (Act 446)

APPENDIX A/1A

LIST OF ESTIMATED QUANTITY FOR S.O'S PERSONAL PROTECTIVE EQUIPMENT (PPE)

No.	Items	Cost of Projects			
		< RM 5 Mil	RM 5 Mil - RM 20	> RM 20 mil. - RM50 mil.	> RM 50 mil.
1.	Safety Boots	5 pairs	10 pairs	15 pairs	20 pairs
2.	Safety Helmets	5 pcs	10 pcs	15 pcs	20 pcs
3.	Full Body Harness (for working at height) If required	If required	If required	If required	If required
4.	Protective gloves	If required	If required	If required	If required
5.	Safety Goggles	If required	If required	If required	If required
6.	Safety Jackets of reflective type	5 pcs	10 pcs	15 pcs	20 pcs
7.	Ear plugs and muffs	If required	If required	If required	If required
8.	Dust masks	If required	If required	If required	If required
9.	Head lamp	If required	If required	If required	If required
10.	 (insert other item if required)				
11.					
12.					
13.					
14.					

* The Contractor shall provide necessary space/ furniture for storage

LIST OF S.O.'S FACILITIES AND EQUIPMENT

1.0 The contractor shall provide the equipment with new fitting and furnitures as listed :-

No.	Kos Projek	Komponen Ruang		Keluasan Ruang (m ²)	Jenis Perabot (unit)						
		Bilik	Orang		Meja	Kerusi Eksekutif	Kerusi Lengan	Rak Fail	Rak Lukisan	Rak	Meja Mesyuarat
1	Ketegori 1 (Kurang Dari RM 10 Juta)	Jurutera Tapak	1	16	1	1	2	1	-	-	-
		Juruteknik	2	16 (8m ² /org)	2	-	2	2	-	-	-
		Bilik Mesyuarat	10	16 (1.6m ² /org)	-	1	10	-	-	-	1
		Bilik Sampel	-	6	-	-	-	1	-	-	-
		Bilik Dokumen	-	6	-	-	-	1	1	-	-
		Tandas (W.C)	1	2.16	-	-	-	-	-	-	-
		Tandas (Shower)	1	2.16	-	-	-	-	-	-	-
	JUMLAH BESAR	Dengan Tandas		64.32 m ²							
		Tanpa Tandas		60 m ²							

NOT APPLICABLE

No.	Kos Projek	Komponen Ruang		Keluasan Ruang (m ²)	Jenis Perabot (unit)						
		Bilik	Orang		Meja	Kerusi Eksekutif	Kerusi Lengan	Rak Fail	Rak Lukisan	Rak	Meja Mesyuarat
2	Kategori 2 (RM 10 - 50 Juta)	Jurutera Tapak	1	16	1	1	2	1	-	-	-
		Pembantu Jurutera	2	24 (12 m ² / org)	2	2	4	2	-	-	-
		Juruteknik	5	40 (8m ² / org)	5	-	5	5	-	-	-
		Pejabat Am / Kerani	2	8 (4m ² / org)	2	-	2	2	-	-	-
		Bilik Mesyuarat	20	32 (1.6m ² / org)	-	2	20	-	-	-	1
		Bilik Stor Am	-	6	-	-	-	1	-	-	-
		Bilik Sampel	-	6	-	-	-	1	-	-	-
		Bilik Dokumen	-	6	-	-	-	1	1	-	-
		Pantry	5-6	12	Dapur bina dalam / sinki						
		Tandas Lelaki (W.C)	1	4.32							
		Tandas Lelaki (Shower)	1	2.16							
		Tandas Perempuan (W.C)	1	4.32							
		Tandas Perempuan (Shower)	1	2.16							
		Surau	5	10							
	JUMLAH BESAR	Dengan Tandas		172.96							
		Tanpa Tandas		160							

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK (TAWARAN SEMULA)

APPENDIX A/2

LIST OF S.O.'S FACILITIES AND EQUIPMENT

Office Equipment And Facilities

The contractor shall supply office equipments for S.O' staff as the following details:

a)1 nos of Laptop with 12th Generation, Intel Processor,Window 11 Home,Intel Iris X graphic,512G SSD,8GB DDR4. The laptop shall equip with Microsoft Office original software(word, excel, power point, project), anti virus original software, and latest AutoCAD Software.The laptop shall also to be supply together with wireless mouse, charger ,backpack and 2 years warranty

b)1 nos of mobile projector,min 3000-4000 lumen,min WXGA 1800 x 800, HDMI cable, VGA cable, charger, remote, bag and accessories related. The mobile projector shall have a warranty atleast 2 years

c) 1 nos of laser printer (colour and monochrome) for A3 size complete with cable and accessories. The printer should be able to scan and copy.Contractors shall supply together with 6 toner/catridge along contract period.The printer shall have a warranty atleast 2 years

LIST OF S.O'S TRANSPORT SERVICES

Transport Services For the S.O and his Staff

- NOT APPLICABLE -

LIST OF LABORATORY EQUIPMENT

- NOT APPLICABLE -

APPENDIX A/5

REQUIREMENTS OF SAFETY AND HEALTH PLAN (S-PLAN)

1. Project Introductions.
2. Management Responsibility.
3. OSH Programme.
4. Hazard Identification, Risk Assessment and Determining Control (HIRADC).
5. Safety and Health Control Form 6. Permit to Work (PTW).
7. Fire Precaution and Protection and Emergency Respond.
8. Safety Operation Procedure.
9. Investigation and Incident Report.
10. Occupational Safety and Health Statistics and Record.
11. Employee Health Examination.
12. Safety, Health and Welfare.
13. List of Machines, Equipment and Plant.
14. Traffic Control at Construction Site.
15. Personnel Protective Equipment (PPE).

Whenever there is any dispute arise, item listed as per Prosedur Kawalan Keselamatan dan Kesihatan Pekerjaan JKR.PK(O).04B (Format Pelan Keselamatan dan Kesihatan Pekerjaan, S-PLAN) under the latest version of Sistem Pengurusan Bersepadu (SPB), JKR shall be referred.

APPENDIX A/5

REQUIREMENTS OF SAFETY AND HEALTH REPORT

1. Introductions.
2. OSH Programme.
3. OSH Statistics and Record.
4. OSH Complaints and Notices.
5. Status of S-Plan.
6. Status of HIRADC.
7. Employee and Worker's Registrations.
8. Registration of Machineries, Equipment and Plants.
9. Traffic and safety controls.
10. Occupational Safety and Health Committee.

Whenever there is any dispute arises, item listed as per Prosedur Kawalan Keselamatan dan Kesihatan Pekerjaan JKR.PK(O).04B (Format Laporan Keselamatan Dan Kesihatan Pekerjaan), under the latest version of Sistem Pengurusan Bersepadu (SPB), JKR shall be referred.

APPENDIX A/7

TABLE A2 : ENVIRONMENTAL QUALITY STANDARDS TO BE COMPLIED WITH BY THE CONTACTOR

Aspects	Parameter	JKR EMS Set Target	Environment Quality (Sewage) Regulations, 2009		National Water Quality Standards (NWQS)	
			Standard A	Standard	Class IIA	Class IIB
Soil	Soil loss	Minimum earthwork Phase construction ≤ 6 berms/benches for slopes (≤ 6m per berm) Reuse topsoil				
Water ^{1,2}	Turbidity	≤ 200 NTU	-	-	≤ 50 NTU	
	Suspended Solid	≤ 100 mg/l	≤ 50 mg/l	≤ 100 mg/l	≤ 50 mg/l	
	Biochemical Oxygen Demand ₅ @ 20°C (BOD) ₅	≤ 50 mg/l	≤ 20 mg/l	≤ 50 mg/l	≤ 3 mg/l	
	Chemical Oxygen Demand (COD)	≤ 100 mg/l	≤ 120 mg/l	≤ 200 mg/l	≤ 25 mg/l	
	pH	5.5 – 9	6 – 9	5.5 – 9	6-9	
	E-Coli	≤ 400 counts / 100 ml	-	-	≤100 counts/ 100ml	≤400 counts / 100 ml
	Dissolved Oxygen(DO)	≥ 4 mg/l	-	-	5-7 mg/l	
	Oil and Grease	≤ 10 mg/l	≤ 5 mg/l	≤ 10mg/l	≤ 40 µg /l, N	
	Ammoniacal Nitrogen (river)	-	≤ 10 mg/l	≤ 20mg/l	≤ 0.3 mg /l	
Air ³	Total Suspended Particulate (TSP) (24hr) Particulate Matter (PM10) (24hr)		≤260 µg/m ³ /day ≤150 µg/m ³ /day			
Noise ⁴	Equivalent Noise Level (L _{eq}), L ₁₀ , L ₉₀		Receiving Land Use (residential)			
			Day time (7.00 am – 7.00 pm) L ₉₀ ≤ 60 dBA; L ₁₀ ≤ 75 dBA; L _{max} ≤ 90 dBA;			
			Evening (7.00 am – 10.00 pm) L ₉₀ ≤ 55 dBA; L ₁₀ ≤ 70 dBA; L _{max} ≤ 85 dBA;			
			Night time (10.00 pm – 7.00 am) Noise Sensitive Areas : L _{Aeq} ≤ 40 dBA			
			Suburban Areas : L _{Aeq} ≤ 45 dBA			
			Urban Areas : L _{Aeq} ≤ 50 dBA			
Vibration ⁵	Vertical Vibration Peak Velocity (mm/s)		Not more than 3 mm/s at receiver location or across real property boundary.			

Reference:

1) 2nd Schedule (Regulation 7), Environmental Quality (Sewage) Regulations 2009, Environmental Quality Act 1974.

(i) Standard A: For location with downstream water intake

(ii) Standard B: For location with no downstream water intake

2) National Water Quality Standards for Malaysia

(i) Class IIA: Water Supply II – conventional treatment required

a) Fishery II – sensitive aquatic species

(ii) Class IIB: Recreational use with body contact

3) Recommended Malaysian Guidelines on Ambient Air Quality

4) Schedule 1 & Schedule 6, Planning Guidelines for Environmental Noise Limits & Control, (DOE, 2004)

5) Planning Guidelines for Vibration Limits and Control of the Environment (DOE, 2004)

Note: N - No visible floatable materials or debris or no objectionable odour, or no objectionable taste

BILL B SUBSTATION BUILDING

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
2	KERJA-KERJA AWAM :- <i>All quantities given are PROVISIONAL only. The actual quantities installed shall be remeasured on the site after completion and price adjusted accordingly (Item 2.1-2.3.3)</i>				
2.1	KERJA-KERJA PEMBERSIHAN TAPAK & PEMASANGAN HOARDING.				
2.1.1	Menyediakan segala keperluan seperti jentera, tenaga buruh dan lain-lain yang berkaitan untuk membersihkan tapak bina dari segala tumbuhan semak samun serta bahan-bahan yang tidak diperlukan dan dibawa keluar dari tapak bina sepertimana yang diarahkan oleh Pegawai Penguasa. (Purata keluasan tapak bina ialah 25m x 10m)	lump sum			
2.1.2	Menyediakan segala keperluan seperti jentera, tenaga buruh dan lain-lain yang berkaitan untuk menebang pokok yang berada di dalam kawasan pembinaan serta mencabut keluar akar dan umbi pokok yang telah ditebang termasuk kerja-kerja menimbus lubang dan dibawa keluar dari tapak bina sepertimana yang diarahkan oleh Pegawai Penguasa. Ukur lilit pokok melebihi 600mm dan tidak melebihi 1200mm yang diukur 1.0m dari aras tanah	Bil	4		
2.1.3	Kerja-kerja pengorekan tanah dengan purata kedalaman 150mm hingga mencapai formation level yang dikehendaki termasuk membawa keluar sisa korekan dari tapak bina mengikut spesifikasi serta arahan Pegawai Penguasa. (Purata keluasan tapak bina ialah 25m x 10m)	lump sum			

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PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK
(TAWARAN SEMULA)

BILL B SUBSTATION BUILDING

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
2.3	<u>KERJA-KERJA BELOW FLOOR FINISH LEVEL.</u>				
2.3.1	<u>Kerja Pembinaan Tetopi Cerucuk (Pile Cap).</u>				
2.3.1.1	Kerja-kerja pengorekan tanah tidak melebihi 2.0m kedalaman.	m3	21		
2.3.1.2	50mm tebal lapis kedap konkrit G15.	m3	1		
2.3.1.3	Acuan konkrit pada permukaan sisi.	m2	20		
2.3.1.4	Besi tetulang :- H12	kg	1400		
	H16	kg	110		
2.3.1.5	Konkrit G35 untuk tetopi cerucuk.	m3	6		
2.3.2	<u>Kerja Pembinaan Tiang Pemula (Stump).</u>				
2.3.2.1	Acuan konkrit pada permukaan sisi.	m2	7		
2.3.2.2	Besi tetulang :- H10	kg	30		
	H25	kg	730		
2.3.2.3	Konkrit G35 untuk tiang pemula	m3	1		
2.3.2.4	Kerja-kerja menimbus dan memadatkan tanah hingga searas dengan tiang pemula.	m3	7		
2.3.3	<u>Kerja Pembinaan Peparit Kabel (Trenches).</u>				
2.3.3.1	Kerja-kerja pengorekan tanah tidak melebihi 2.0m kedalaman.	m3	42		
2.3.3.2	50mm tebal lapis kedap konkrit G15.	m3	2		
2.3.3.3	Membekal dan menghampar 0.25mm tebal PE plastic sheeting mengikut spesifikasi dan arahan Pegawai Penguasa.	m2	17		
2.3.3.4	Acuan konkrit pada permukaan sisi.	m2	96		
2.3.3.5	Besi tetulang :- H10	kg	1400		
2.3.3.6	Konkrit G35 untuk peparit kabel.	m3	12		
2.3.3.7	Menyapu lapisan kalis air dari jenama yang diluluskan pada dinding peparit kabel.	m2	55		
2.3.3.8	20mm tebal lepa simen 1:3 pada permukaan dinding dan lantai peparit kabel.	m2	71		
2.3.3.9	Menghampar dan memadatkan pasir sungai kedalam peparit kabel.	m3	25		
2.3.3.10	50mm tebal lepa simen 1:3 pada permukaan atas peparit kabel.	m2	17		

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PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK
(TAWARAN SEMULA)

BILL B SUBSTATION BUILDING

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
	<u>KERANGKA BANGUNAN (FRAME) (CONT'D).</u>				
2.4.5	<u>Kerja Pembinaan Rasuk Bumbung & Flat Roof.</u>				
2.4.5.1	Acuan konkrit pada permukaan sisi.	m2	60		
2.4.5.2	Acuan konkrit pada permukaan bawah	m2	105		
2.4.5.3	Besi tetulang :-				
	H10	kg	1700		
	H16	kg	200		
	H25	kg	455		
2.4.5.4	Konkrit G30 untuk rasuk bumbung dan flat roof.	m3	24		
2.4.6	<u>Kerja Pembinaan Tiang Peneguh (Siffner).</u>				
2.4.6.1	Acuan konkrit pada permukaan sisi.	m2	12		
2.4.6.2	Besi tetulang :-				
	H10	kg	171		
	H12	kg	43		
2.4.6.3	Konkrit G30 untuk tiang.	m3	1		

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BILL B SUBSTATION BUILDING

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
2.5.1	BUMBUNG DAN SALUR AIR HUJAN.				
	<u>Pembinaan Lapisan Kalis Air.</u>				
2.5.1.1	Sediakan permukaan serta menyapu lapisan kalis air dari jenama yang diluluskan pada permukaan flat roof dan talang konkrit mengikut spesifikasi pengilang dan arahan Pegawai Penguasa.	m2	105		
2.5.1.2	25mm tebal lepa simen 1:3 pada permukaan flat roof dan talang konkrit mengikut spesifikasi dan arahan Pegawai Penguasa.	m2	140		
2.5.2	<u>Pembinaan Bumbung.</u>				
2.5.2.1	Menyediakan lukisan/ pelan rekabentuk serta pemasangan struktur kekuda bumbung yang merangkumi pengiraan rekabentuk kekuda bumbung, lukisan keseluruhan struktur kekuda, 'method statement' pemasangan kekuda bumbung dan lukisan / pelan rekabentuk hendaklah disahkan, ditandatangani dan dicop oleh Jurutera Perekabentuk bertauliah.	lump sum			
2.5.2.2	Kerja-kerja membekal dan memasang kepingan bumbung genting konkrit dari jenama yang diluluskan termasuk pembinaan dan pemasangan kerangka kekuda bumbung dari jenis cold formed steel roof truss (C-Channel), wall plate, bottom dan joint mengikut spesifikasi pembekal yang diluluskan oleh JKR.	m2	162		
2.5.2.3	Kerja-kerja membekal dan memasang 230mm lebar x 20mm tebal papan tumpu kasau (facia board) dari jenis kayu keras mengikut spesifikasi dan arahan Pegawai Penguasa.	m	51		

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PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK
(TAWARAN SEMULA)

BILL B SUBSTATION BUILDING

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
2.9	<u>PEMBINAAN PERIMETER DRAIN.</u>				
2.9.1	<u>Perimeter Drain.</u>				
2.9.1.1	Pengorekan tanah untuk pembinaan tapak asas.	m3	12		
2.9.1.2	150mm tebal hadkor.	m3	3		
2.9.1.3	50mm tebal lapis kedap konkrit G15	m3	1		
2.9.1.4	Haunching Concrete G15 as bedding	m3	5		
2.9.1.5	230mm halfround precast concrete drain.	m	46		
2.9.1.6	115 mm tebal dinding bata tanah liat.	m2	30		
2.9.1.7	12mm tebal lepekan simen mortar 1:3.	m2	37		
2.9.2	<u>Precast Concrete 'U' Drain.</u>				
2.9.2.1	Pengorekan tanah untuk pembinaan tapak asas.	m3	56		
2.9.2.2	150mm tebal hadkor.	m3	11		
2.9.2.3	50mm tebal lapis kedap konkrit G15.	m3	4		
2.9.2.4	Papan acuan.	m2	74		
2.9.2.5	Besi tetulang H10 untuk tapak asas.	kg	1830		
2.9.2.6	Konkrit G30	m3	11		
2.9.2.7	450mm width x 300mm depth Precast Concrete 'U' Drain.	m	120		
2.9.2.8	Bekal, timbus dan padatkan tanah pada bahagian tepi longkang.	m3	30		

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK
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PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK
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Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
	COLLECTION FROM PAGE B /1/16 FROM PAGE B /2/16 FROM PAGE B /3/16 FROM PAGE B /4/16 FROM PAGE B /5/16 FROM PAGE B /6/16 FROM PAGE B /7/16 FROM PAGE B /8/16 FROM PAGE B /9/16 FROM PAGE B /10/16 FROM PAGE B /11/16 FROM PAGE B /12/16 FROM PAGE B /13/16 FROM PAGE B /14/16 FROM PAGE B /15/16 FROM PAGE B /16/16				
PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK (TAWARAN SEMULA)				To "Ringkasan Tender"	

BILL C EXTERNAL WORK

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
2.11	<u>KERJA-KERJA PERSEKITARAN :-</u> <i>All quantities given are PROVISIONAL only. The actual quantities installed shall be remeasured on the site after completion and price adjusted accordingly(2.11.1- 2.11.3.12)</i>				
2.11.1	<u>Pembinaan Pagar.</u>				
2.11.1.1	Menyediakan segala keperluan seperti jentera, tenaga buruh dan lain-lain yang berkaitan untuk merobohkan chain link fencing sediaada yang telah rosak termasuk memotong dan mencabut keluar tiang-tiang pagar tersebut dan diserahkan kepada pihak pasukan (client) untuk penyimpanan sepertimana yang diarahkan oleh Pegawai Penguasa. (Purata keseluruhan panjang pagar = 227m)	lump sum			
2.11.1.2	Pengorekan tanah untuk tapak asas tiang pagar.	m3	2		
2.11.1.3	Membekal dan memasang 50mm x 50mm x 6mm tebal tiang pagar dari jenis keluli lembut bersudut yang dibina berbentuk Y dengan purata ketinggian 3100mm termasuk kerja-kerja mengecat dengan 1 lapisan cat primer dan 2 lapisan cat penyudah pada permukaan logam serta dipasang pada jarak 3000mm c/c mengikut penentuan kerja dan arahan Pegawai Penguasa.	Bil	76		
2.11.1.4	Konkrit G25 untuk tapak asas tiang pagar.	m3	2		
2.11.1.5	Membekal dan memasang 2300mm x 50mm x 50mm x 6mm tebal keluli lembut bersudut untuk tiang penjuru dan tiang pengikat lengkap dengan plat penyambungan, bolt and nut termasuk mengecat dengan 1 lapisan cat primer dan 2 lapisan cat penyudah pada permukaan logam mengikut penentuan kerja dan arahan Pegawai Penguasa.	Bil	90		
2.11.1.6	Konkrit G25 untuk tapak asas tiang penjuru/pengikat.	m3	3		

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(TAWARAN SEMULA)

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BILL C EXTERNAL WORK

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
2.11	<u>KERJA-KERJA PERSEKITARAN (CONT'D)</u>				
2.11.3	<u>Pembinaan Manhole Kabel.</u>				
2.11.3.1	Pengorekan tanah untuk pembinaan tapak asas.	m3	24		
2.11.3.2	150mm tebal hadkor.	m3	2		
2.11.3.3	50mm tebal lapis kedap konkrit G15.	m3	1		
2.11.3.4	Papan acuan.	m2	7		
2.11.3.5	Tetulang fabrik A10.	m2	25		
2.11.3.6	Konkrit G30.	m3	4		
2.11.3.7	230mm tebal dinding bata tanah liat.	m2	22		
2.11.3.8	20mm tebal lepekan simen mortar 1:3 pada bahagian yang terdedah.	m2	30		
2.11.3.9	Membina 150mm lebar x 200mm tebal rasuk konkrit bertetulang dengan 5 bilangan besi tetulang utama H12 dan tetulang pengikat H10 pada jarak 150 c/c termasuk papan acuan dan lain-lain kelengkapan yang berkaitan mengikut spesifikasi dan arahan Pegawai Penguasa.	Bil	2		
2.11.3.10	Membina 100mm lebar x 200mm tebal rasuk konkrit bertetulang dengan 4 bilangan besi tetulang utama H10 berserta handle hook dari tetulang H10 termasuk papan acuan dan lain-lain kelengkapan yang berkaitan mengikut spesifikasi dan arahan Pegawai Penguasa.	Bil	18		
2.11.3.11	Membekal dan memasang 150mm diameter PVC paip Class B (PN10) lengkap dengan draw wire mengikut spesifikasi dan arahan Pegawai Penguasa.	m	150		
2.11.3.12	Bekal, timbus dan padatkan tanah pada bahagian tepi manhole.	m3	8		

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK
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Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
	COLLECTION FROM PAGE C /1/3 FROM PAGE C /2/3 FROM PAGE C /3/3				
PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK (TAWARAN SEMULA)				To "Ringkasan Tender"	

BILL D MEDIUM VOLTAGE 11kV SYSTEM

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
	All quantities given are PROVISIONAL only. To supply, delivery, installation, testing, setting, commissioning and maintenance during the defect liability period for the 11kV high tension power system all in accordance with the specification and drawings. All materials, labour etc. required for complete installation, whether or not specified or separately itemised shall be deemed to be included in the rates quoted below.				
1	HT PANEL (HT SWITCHGEAR ROOM, SUBSTATION BUILDING) To supply, install, testing, commissioning as below: 11kV Incoming Panel				
1.1	Metal Enclosed Switchgear Cubicle c/w 11KV, 630A, 20kA, 3sec. Vacuum Circuit Breaker c/w motorised hand charged spring, truck mounted, interlocked with the door for operated safety and convenience, manual/electrical release mechanism, circuit breaker release mechanism and circuit breaker operation counter withdrawable type, Voltage Transformer, Current Transformers, IDMT numerical overcurrent and earth fault 5P10 CT's, Digital Power Meter, 150/5A Current transformers, RYB Phase indicating light, HT removable fuse, 630A Main busbar, earth switch, 2nos of heater (cable compartment and busbar compartment), mimic diagram, hours counter and etc. as per specification.	set	1		
1.2	11kV Outgoing Panel Metal Enclosed Switchgear Cubicle c/w 11KV, 630A, 20kA, 3sec. Vacuum Circuit Breaker c/w motorised hand charged spring, truck mounted, interlocked with the door for operated safety and convenience, manual/electrical release mechanism, circuit breaker release mechanism and circuit breaker operation counter withdrawable type, Voltage Transformer, Current Transformers, IDMT numerical overcurrent and earth fault 5P10 CT's, Digital Power Meter, 150/5A Current transformers, RYB Phase indicating light, HT removable fuse, 630A Main busbar, earth switch, 2 nos of heater (cable compartment and busbar compartment), mimic diagram, hours counter and etc. as per specification. Refer drawing JKR/UTNP/ELEKTRIK/02-09	set	2		
PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK (TAWARAN SEMULA)				To Collection Page	

BILL D MEDIUM VOLTAGE 11kV SYSTEM

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
2	REMOTE SWITCHING CONTROLLER & RCP				
2.1	To supply remote control panel metal clad type c/w push button, indicator,internal wiring, conduit, trunking/trenches (from VCB panel to RCP room) control cable and other accessories for 11kV VCB switchgear on/off system.	set	1		
3	D.C. SUPPLY UNIT				
3.1	DC Heavy Duty maintenance free Nickel Cadmium battery bank with external recombinators c/w Trickle & boost charger (stand alone unit) for HT protective and tripping devices c/w all associated wiring, accessories and connection (Capacity of battery bank to be justified by HT equipment supplier)	set	1		
4	EARTH FAULT INDICATOR				
4.1	Supply and install Earth Fault Indicator for incoming and outgoing 11kV cable complete with fiber board, wiring, conduit, ZCT and accessories	set	1		
5	TRANSFORMER ROOM, SUBSTATION BUILDING				
	POWER TRANSFORMER				
5.1	1250 kVA, 11kV/433V , Dyn-11, 3 phase, 50Hz, 20kA Cast Resin Distribution Transformer Indoor Type with low loss (No Load < 1880W, Load Loss < 8170 at 120o C) Hot-Dip Galvanised Steel Enclosure IP2X, winding temperature monitoring device (WTM),Temperature controlling device, winding temperature trip and alarm, air forced cooling, Environment class E2, Climate Class C2, Fire behaviour class F1 and etc. as per specification.	set	1		
5.2	Termination kits using push-on systems with silicone rubber insulating bodies for Cast Resin Distribution Transformer as per specification.	set	1		
5.3	Termination cable box (Hot-Dip Galvanised) for top entry/bottom entry (High voltage terminal/Low voltage terminal) for Cast Resin Distribution Transformer, etc as per *contractor to ensure the cost above including test /confirmation of the internal position of transformer to avoid any movement or displacement during transportation	set	1		

BILL D MEDIUM VOLTAGE 11kv SYSTEM

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
6	HIGH TENSION CABLE				
	*NOTES: Rates shall include for the supply and pulling of cables including trenching, sand bedding, jointing of cables, terminations, backfilling, compaction, cable marker, bricks, multi strand nylon rope, disposal of surplus material and making good of site surface as to complete the installation in accordance with specification, L-S13 guidelines and to the satisfaction of the S.O representative. Cost of machinery, excavating, turfing shall be included				
6.1	Supply and lay 3C x 240sq.mm XLPE/SWA/PVC MV Cu cable laid in trenching from 11kV 630A Switchgear to 1250kVA Cast Resin Transformer c/w HT termination and etc. as per spesification. Work shall include sand and trench concrete cover	Meter	20		
6.2	Cut and joint work of 1 nos 3C x 240sq.mm XLPE/SWA/PVC with existing MV Cu cable laid underground, tapping from nearest CSS RAJD outgoing cable to new substation using cold shrink termination c/w joint kits and related accessories, .Cut and joint work cable must be done by certified 11kV cable jointer. The cable must undergo VLF test, Insulation and phasing after work done.	meter	50		
6.3	Cut and joint work of 1 nos 3C x 240sq.mm XLPE/SWA/PVC outgoing cable from new substation with existing MV Cu cable laid underground, tapping from nearest incoming cable of CSS 3RAD using cold shrink termination c/w joint kits and related accessories, .Cut and joint work cable must be done by certified 11kV cable jointer. The cable must undergo VLF test, Insulation and phasing after work done.	meter	50		

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK
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BILL D MEDIUM VOLTAGE 11kv SYSTEM

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
7	EARTHING *All connection of the copper tape to the earth electrode shall be by exothermic welded connections.				
7.1	To supply and install solid earthing system with 16mm diameter X 3000mm length copper jacketed(min radial thickness 0.25mm) steel core earth electrode c/w heavy duty precast concrete earth chamber (300mm x 300mm x 180mm) and removable lifting lug concrete cover etc	lot	4		
7.2	To supply and install 25mm x 3mm copper tape surface, 300mm from finished floor level and trenches around internal wall c/w DC Tape Clip (every 500mm) and accesories for:	lump sump			
7.2.1	HT Room				
7.2.2	Transformer Room				
7.3	To supply and install 25mm x 3mm copper tape to link to every and each earth conductor	lump sump			
7.4	To supply and install 25mm x 6mm copper protective conductor	lump sump			
7.5	To supply and install 50mm x 6mm x 300mm copper Main Earthing Bar/Earth point, mount the main earthing bar with a transparent protective cover.Label, engraved and marked in red 'Main Earthing Bar- Safety Electrical Connections-Do Not Remove' to cover full length of the main earthing bar and other related accesories for:	lot	4		
7.5.1	HT Room				
7.5.2	Transformer Room				
7.6	To supply and install 1 x 120 sq mm PVC BLACK cable from transformer neutral earth point to Earth Chamber.	Meter	10		

BILL D MEDIUM VOLTAGE 11kv SYSTEM

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
7	EARTHING (CONT'D)				
7.7	To supply and install solid earthing system with 16mm diameter X 3000mm length copper jacketed(min radial thickness 0.25mm) steel core earth electrode c/w heavy duty precast concrete earth chamber (300mm x 300mm x 180mm),removable lifting lug concrete cover.The earth chamber shall be permanently legibly marked with the word 'Transformer Neutral Earth' etc	lot	1		
7.8	To supply and install 150mm dia. PVC pipe class B (PN10) c/w draw wire to be extended 600mm beyond drain for laying in copper tape from inside of the building to the earth chamber	meter	60		
8	LIGHTNING Electrical Protection for the building shall comply with MS IEC 62305-Protection against lightning as enforced by Energy Commission, Arahan Suruhanjaya Tenaga Bilangan 4 Tahun 2019				
8.1	To supply and install:				
8.1.1	25mm x 3mm copper tape, brass support hooked c/w base phosphor,DC Tape clip with fixing bracket and accessories related	lump sum			
8.1.2	Testing joint with conceal junction box (100mm x 100mm x 38mm) c/w dc tape clip cover.The test joint shall be installed 2500mm from finished floor level	lot	4		
8.1.3	25mm x 3mm down drop copper tape with uPVC heavy duty ducting conceal 50mm x 25mm)	lot	4		
8.1.4	Earthing system with 16mm diameter X 3000mm length copper jacketed(min radial thickness 0.25mm) steel core earth electrode c/w heavy duty precast concrete earth chamber (300mm x 300mm x 180mm),removable lifting lug concrete cover.	lot	4		
PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK (TAWARAN SEMULA)				To Collection Page	

BILL D MEDIUM VOLTAGE 11kv SYSTEM

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
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BILL E LOW VOLTAGE SYSTEM

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
	<i>All quantities given are PROVISIONAL only.</i> To supply, install, testing and commissioning the cubicle type FLOOR MOUNTED FRONT & REAR ACCESS Main Switch Boards FROM 2B c/w all terminations etc. as per specification comprising of the following: <i>a) All switchgears shall be rated at 50kA, 415V for 1sec.</i> <i>b) Comprehensive catalogues of the SPD offered are to be submitted with this tender.</i>				
A	LV ROOM, & SUBSTATION BUILDING				
1	MAIN SWITCH BOARD				
1.1	Indoor metalclad self contained floor standing type front and rear access Low Voltage Board (MSB) 1600A 4P ACB 400V 65kA c/w Shunt trip,withdrawble type,flush mounted horizontal drawout isolation,arc chute for each pole,renewable contact type, Rotary Handle & Pad lock, MCB, 5P10CT's, IDMT OC/EF relay, Anti condensation heater with automatic thermostate, Microprocessor Digital power meter, phase indicator, Busbar, Looping Cable, Main Earthing Bar as LS-1 specification. The board and outgoing shall consist of:	lot	1		
1.1.1	3 no of 600A 4P MCCB				
1.1.2	1 no of 400A 4P MCCB				
1.1.3	1 no of 100A 4P MCCB				
1.1.4	1 no of 500A 4P MCCB for capacitor bank				
1.1.5	2 no of 60A DP MCCB for DB P&L				
1.1.6	Microprocessor based DPM for 2 nos outgoing of 600A 4P MCCB . Detail of DPM shall follows L-S1 section 6.0				
1.1.7	1 nos of Surge Protection Device , I _{max} >65kA with voltage protection level Up< 1800V c/w MCCB(size specify by the manufacturer), internal wiring and accessories. Detail of SPD shall follows L-S1 section 7.0				
1.1.8	OC/EF IDMT microprocessor based relay , 5P10 CT's complete with internal wiring and accessories for 1 no for incoming and 3 nos outgoing MCCB . as per drawing JKR/UTNP/ELEKTRIK/03-09				

**PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK
(TAWARAN SEMULA)**

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BILL E LOW VOLTAGE SYSTEM

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
4	UNDERGROUND DUCTS AND ACCESSORIES To supply, deliver, install and test the following: Rate shall include for the supply and laying of underground ducts including trenching, jointing (using proper collars), backfilling, draw wire, compaction, crossing markers, disposal of surplus material, making good of site surface as per drawings and specifications and to satisfaction of S.O Representative.				
4.1	150mm dia. Double Layer Corrugated HDPE Pipe from manhole no.1 to manhole no.2 at Feeder Pillar No.3	meter	240		
i	*The cost shall include the work of an open cut on existing pavement about 1m away from existing drainage and lay underground cable from MSB Room,manhole no.1 to manhole no.2. Contractor shall do making good after work done				
5	PRE CAST MAN HOLE CONCRETE & DUCT LAYING Precast Electrical Manhole (PEM) and Duct Laying.				
5.1	Provide all labour, material and machinery for the construction, completion, handing over and maintenance during DLP of the PEMs, duct laying and necessary accessories in accordance with the drawing, specification and JKR requirement. The rate quoted below shall include all cutting, excavation, back filling, disposal of extra materials, reinstatement etc.				
5.1.1	4' X 4' X 4' Precast Electrical Manhole c/w precast concrete slab cover.	lot	2		
6	DISTRIBUTION BOARD				
6.1	DB LIGHTING & POWER To supply and install Distribution Board, 12 way metal clad type c/w 1no of 60A MCCB DP, 1no of 30mA 60A DP RCCB, 1no of 100mA 60A DP RCCB, 6A, 20A & 32A MCB, internal wiring and accessories related	lot	2		

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK (TAWARAN SEMULA)	To Collection Page
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BILL E LOW VOLTAGE SYSTEM

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
8	LIGHTING AND FITTINGS <i>All equipment supplied at site shall use list of approved equipment and brand by EMAL</i>				
8.1	To supply and install 1 x 20W 1200mm self ballasted double capped T8 LED tube (frosted type) fittings, ceiling mounted, 0.95pf c/w lamp holder and accessories	nos.	13		
8.2	To supply and install 1 x 20W 1200mm self ballasted double capped T8 LED tube (frosted type) weatherproof (IP 65) capping LED fittings wall mounted with 0.95pf c/w, lamp holder, photoelectric control unit, 20A SPN contactor and accessories	nos.	7		
8.3	To supply and install surface type self contained LED emergency light c/w high temp nickel cadmium battery 3 hours backup duration	nos.	7		
8.4	To supply and install 400mm dia industrial wall fan complete with bracket and necessary accessories	nos.	3		
8.5	To supply and install 300mm dia exhaust fan wall type complete with necessary accessories	nos.	3		
9	EARTHING To supply and install:				
9.1	50mm X 6mm copper Main Earthing Bar, mount the main earthing bar with a transparent protective cover. Label, engraved and marked in red 'Main Earthing Bar- Safety Electrical Connections-Do Not Remove' to cover full length of the main earthing bar.	lot	1		
9.2	25mm X 6mm copper protective conductor	lot	1		
9.3	Earth chamber, 16mm dia. X 2400mm (L) copper jacketed (minimum radial thickness 0.25mm) steel core earth electrode c/w precast heavy duty concrete earth chamber & removable concrete cover etc. Repeat if required ($R < 1\Omega$). The connection of earthing inside the earth chamber must be done by exothermic weld	lot	2		

BILL E LOW VOLTAGE SYSTEM

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
B	OUTSIDE SIMULATOR BUILDING				
1	LV FEEDER PILLAR,No.3				
1.1	Floor standing type front and rear access 600A MCCB 4P 400V 50kA metalclad LV feeder pillar IP54 c/w Shunt trip, external operating handle with padlocks,MCB, CT's, OC/EF relay,SPD Anti condensation heater with thermostat, phase indicator, heater indicator, voltmeter(analog), ammeter (analog) with max demand,selector switch,Busbar and extended busbar, Looping Cable, Main Earthing Bar as LS-1 specification. The board shall consist	lot	1		
1.1.1	1 no of 250A 4P MCCB				
1.1.2	1 no of 350A 4P MCCB				
1.1.3	1 no of 100A 4P MCCB				
1.1.4	2 nos kwh meter for 250A & 350A outgoing including CT's with TNB standards, internal wiring and accessories				
1.1.5	Surge Protection Device, I _{max} >65kA with voltage protection level Up< 1800V c/w MCCB(size specify by the manufacturer), internal wiring and accessories. Detail of SPD shall follows L-S1 section 7.0				
1.1.6	3 nos OC/EF IDMT microprocessor based relay ,5P10CT's complete with internal wiring and accessories				
1.1.7	2 nos of 1 x 8W LED T8 luminaires 600mm complete with lamp holder, internal wiring and accesories				
1.1.8	1 nos of 13A metal clad SSO complete with internal wiring and accesories as per drawing JKR/UTNP/ELEKTRIK/04-09 *extended busbar for FP shall used the same brand as Feeder Pillar busbar				

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK
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BILL E LOW VOLTAGE SYSTEM

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
3	PRE CAST MAN HOLE CONCRETE & DUCT LAYING Precast Electrical Manhole (PEM) and Duct Laying.				
3.1	Provide all labour, material and machinery for the contruction, completion, handing over and maintenance during DLP of the PEMs, duct laying and necessary accessories in accordance with the drawing, spesification and JKR requirement.The rate quoted below shall include all cutting, excavation, back filling, disposed of extra materials, reinstatement etc.				
3.1.1	4' X 4' X 4' Precast Electrical Manhole c/w precast concrete slab cover.	lot	2		
4	CONCRETE PLINTH				
4.1	Concrete plinth for FP3 with estimated size of 0.5m(h) x 2m(l) x 1m(w) c/w paved platform for maintenance, sand and etc. Final size shall suite with new feeder pillar.Concrete plinth design shall be endorsed by C & S Engineer.For Feeder Pillar 1, a layer of cement render/paved with atleast 2in thickness to be applied surround it	lot	1		
5	EARTHING SYSTEM				
5.1	Earthing for Feeder Pillar no. 1(existing) and no.3(new) To supply and install solid earthing system using 1 nos x (25mm x 6mm) copper tape, 16mm dia. X 2 no. of 1500mm(L) copper jacketed steel core earth electrode and precast heavy duty concrete earth chamber c/w removable RC cover. The connection of earthing inside the earth chamber must be done by exothermic weld	lot	2		

BILL E LOW VOLTAGE SYSTEM

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
C	ELECTRICAL ROOM, SIMULATOR BUILDING				
1	SUB BOARD No.1				
1.1	To supply and install Indoor metalclad wall mounted type Switch Board c/w, indicator lamp,busbar,looping cable,busbar and other accessories as specification LS-1.	lot	1		
1.1.1	1 no of 350A MCCB TPN (incoming)				
1.1.2	1 no of 300A MCCB TPN (outgoing)				
1.1.3	1 no of 60A MCCB TPN (outgoing)				
1.1.4	1 no of 60A MCCB TPN(outgoing)				
1.1.5	Microprocessor based DPM . Detail of DPM shall follows L-S1 section 6.0				
1.1.6	1 nos of Surge Protection Device , I _{max} >40kA with voltage protection level Up< 1800V c/w MCCB(size specify by the manufacturer), internal wiring and accessories. Detail of SPD shall follows L-S1 section 7.0				
1.1.7	OC/EF IDMT microprosessor based relay , 5P10 CT's complete with internal wiring and accessories.				
2	DISTRIBUTION BOARD No.1				
2.1	To supply and install Indoor metalclad wall mounted type c/w busbar, Looping Cable as specification LS-1.	lot	1		
2.1.1	1 no of 300A MCCB TPN (incoming)				
2.1.2	12 no of 40A MCCB TPN (outgoing) for isolator				
2.1.3	1 no of ELR 300mA microprocessor based type c/w ZCT, internal cabling and accesories				
3	DISTRIBUTION BOARD No.2				
3.1	To supply and install Indoor metalclad wall mounted type c/w busbar, Looping Cable as specification LS-1 complete with accessories as follows:	lot	1		
3.1.1	1 no of A 60 MCCB TPN (incoming)				
3.1.2	16 no of 16AMCB (outgoing)				
3.1.3	2 no of 32A MCB(outgoing)				
3.1.4	2 no of 60A DP RCCB 30mA, 1 no of 100mA				

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK
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BILL E LOW VOLTAGE SYSTEM

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
4	SUBMAIN CABLES NOTES: Rates shall include for the supply and pulling of cables including trenching, sand bedding, jointing of cables, terminations, backfilling, compaction, cable marker, bricks, multi strand nylon rope, disposal of surplus material and making good of site surface as to complete the installation in accordance with specification, L-S3 guidelines and to the satisfaction of the S.O representative.				
4.1	To supply and install 4C 120sq. mm XLPE/PVC Cu. cable laid in trunking from outgoing 300A MCCB TPN Sub Board No.1 to DB No.1.	meter	6		
4.2	To supply and install 4C 16 sq. mm PVC/PVC Cu. cable laid in trunking from outgoing 60A MCCB TPN Sub Board No.1 to DB No.2	meter	6		
5	UNDERGROUND DUCTS AND ACCESSORIES To supply, deliver, install and test the following: Rate shall include for the supply and laying of underground ducts including trenching, jointing (using proper collars), backfilling, draw wire, compaction, crossing markers, disposal of surplus material, making good of site surface as per drawings and specifications and to satisfaction of S.O Representative.				
5.1	150mm dia. G.I pipe Class 'C' i) from manhole no.4 to cable pit inside electric room,Bangunan Simulator The work shall include hacking and making good apron/floor/drainage/turfing	meter	20		

BILL E LOW VOLTAGE SYSTEM

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
6	PRE CAST MAN HOLE CONCRETE & DUCT LAYING				
	Precast Electrical Manhole (PEM) and Duct Laying.				
6.1	Provide all labour, material and machinery for the construction, completion, handing over and maintenance during DLP of the PEMs, duct laying and necessary accessories in accordance with the drawing, specification and JKR requirement. The rate quoted below shall include all cutting, excavation, back filling, disposal of extra materials, reinstatement etc.				
6.1.1	4' X 4' X 4' Precast Electrical Manhole c/w precast concrete slab cover.	lot	1		
6.1.2	electrical pit 450mm x 45mm x 450mm with concrete cover	lot	1		
7	EARTHING				
7.1	To supply and install solid earthing system using 1 nos x (25mm x 6mm) copper tape, 16mm dia. X 2 no. of 1500mm(L) copper jacketed steel core earth electrode and precast heavy duty concrete earth chamber c/w removable RC cover. The connection of earthing inside the earth chamber must be done by exothermic weld	lot	1		

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK
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BILL E LOW VOLTAGE SYSTEM

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
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PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK (TAWARAN SEMULA)					
				To "Ringkasan Tender"	

BILL F MISCELLANEOUS

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
	<i>All quantities given are PROVISIONAL only.</i>				
1	MISCELLANEOUS TESTING EQUIPMENT				
1.1	Tools, testing and maintenance equipment for all equipments, as fitted drawings, manuals etc. as required by the specification for :- a) Cast Resin Distribution Transformer b) 11 kV VCB Circuit Breaker withdrawal type c) 11 kV high voltage underground cable d) 1kV Low voltage underground cable e) DC Supply Unit f) Earthing System g) Manufacturer Work Tests, Erection and Test on Completion h) Service and Maintenance	lump sump			
2	FACTORY ACCEPTANCE TEST				
2.1	Factory witness acceptance, performance test of the High Voltage and Low Voltage System equipment at factory origin for JKR Electrical Staff. All expenses, fares, transportation, food, lodging, etc for full duration Including traveling days shall be covered. Government rates shall be applied. The FAT equipment involves:	lump sump			
2.1.1	11kV Switchgear panel. Test shall be done as per IEC L-S15 Standard, Appendix 3				
2.1.2	1250kVA Cast Resin Transformer. Test shall be done as per L-S17 section 5				
2.1.3	High voltage cable Manufacture Acceptance Test (VLF-PD) and Withstand test according to IEEE and IEC				
2.1.4	Main Switch Board, Feeder Pillar, Sub Board & Capacitor bank				

BILL F MISCELLANEOUS

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
3.1	Rubber Mat (6mm(T) x 1000mm(W) x Full length of HT Switchgear, Main Switch Board, Capacitor Bank, Bilik Suis Bangunan Simulator, Control Panel and. etc)	lump sump			
3.2	Electric Shock Treatment Chart c/w frame and 3 language	lump sump			
3.3	Signage : 'BAHAYA', 'DILARANG MASUK', BILIK SUIS UTAMA, BILIK TRANSFORMER, BILIK PEKAKAS SUIS 11KV, BILIK RCP and DILARANG MEROKOK. To supply together 4 sets of 'BAHAYA - KERJA-KERJA SEDANG DIJALANKAN' sign complete with hanging string (200mm x 300mm, background red and letter white in colour)	lump sump			
3.4	Single line diagram for HT Switchgear and LV MSB A3 size complete with frame and endorsed by PEPC	lump sump			
3.5	To supply sand bedding material inside HV trenches, Transformer and low voltage room. The sand must cover all the cable inside trenches	lump sump			
3.6	CO2 fire extinguisher class of fire c/w bracket and accesories complete with discharge hose, nozzle and wall bracket shall be supplied and installed in every switch room.	lot	5		
3.7	Digital Insulation Resistance Tester rated 5kV MIT 525 or equivalent for high voltage cable complete with lit-ion battery, crocodile clip, cable and accesories	lot	1		
4	INSULATIVE COATING				
4.1	To apply insulative epoxy floor coating (copon EA-4) or equivalent for:	lump sump			
4.1.1	High Voltage Switchgear room				
4.1.2	Transformer room				
4.1.3	Low voltage room				
	the contractor must clean the floor before apply the coating. Final colour will be decided by S.O's representative				
	*Refer Substation building layout drawing for dimension				

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK (TAWARAN SEMI II A)	To Collection Page
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BILL F MISCELLANEOUS

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
6	TERMINATION,SHUTDOWN,NORMALISED OF SUPPLY AND WORK COORDINATION	lump sump			
6.1	The contractor shall isolate and disconnect the existing electrical supply from 3 RAD compact substation LV outgoing to:				
6.1.1	Termination Box Bangunan Simulator PULMAT & existing 250A TPN board and do a supply connection from new Feeder Pillar. The work must be coordinate with JKR and Stakeholder to avoid any unnecessary disruption of supply.The work shall be done once all the HT,LV system and Feeder Pillar has been installed and test.				
6.1.2	To do an Insulation Resistance & Continuity test to all existing cable inside trunking in electrial room,Bangunan simulator before connect the cable with new Isolator and Simulator board.The result shall be recorded and submit to JKR				
6.1.3	The contractor shall do a coordination work and inform JKR in advance for shutdown the supply between MKRAJD and 3 RAD compact substation in order for cut and joint existing ring cable to new substation. In a matter of energizing the system, it must be synchronise with main intake 11kV at Kg Gugup. For shutdown and normalised the system towards the entire project period, contractor shall ensure the present of atleast one(1) person of 11kV competent person (BO) and one (1) Jurutera Elektrik Kompeten.				

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING,
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BILL F MISCELLANEOUS

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
7	INSPECTION, TESTING & COMMISSIONING				
7.1	Allow here or in the rates for the cost of carrying out inspection and test at works, testing and commissioning of the installation and the equipment as required in the relevant Specifications including providing all necessary labour, materials, transportation, appliance or equipment, electricity and fuels, and paying all fees and charges for tests carried out by others.	lump sum			
8	COMPETENT PERSONS				
8.1	The Electrical Contractor shall give or appoint a Competent Person or Competent Persons in compliance with the Electricity Regulations 1994 to provide necessary superintendence over the whole site operation for the full duration of the works and as long thereafter proper fulfillment the Electrical Contractor's obligation. The qualification of the Competent Persons shall be in compliance with the Electricity Regulations 1994 and approved by the S.O.'s Representative, and he shall be constantly on the Site and shall devote his whole time to the superintendence of the works progress. He shall take responsibility for the construction, installation, testing, commissioning and operation of the whole works in compliance with the Electricity Regulation 1994 and any other laws related to this contract. The S.O.'s Representative will be at liberty to object to and requires the Electrical Contractor to remove forthwith from the Site such Competent Person, who in the opinion of the S.O.'s Representative, misconducts himself or is incompetent or negligent in the proper considered by the S.O.'s Representative to be undesirable. The Electrical Contractor shall, upon the removal of such person, thereafter replaced as soon as possible a new Competent Person in compliance with the requirement of this section.	lump sum			

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING,
PERAK (TAWARAN SEMULA)

To Collection Page

Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
9	INSTALLATION AND TESTING REPORT				
9.1	Allow here or in the rates for the cost of carrying out inspection and test at works, testing and commissioning of the installation and the equipment of Sub-Contractor Works as required in the relevant Specifications including providing all necessary labour, materials, transportation, appliance or equipment, electricity and fuels, and paying all fees and charges for tests carried out by others (starting from T&C and every 6 months after until end of DLP)	lump sump			
	Testing and commissioning of the whole HT and LV system installed using calibrated and appropriate equipment must include:-				
9.1.1	Site Acceptance, Testing & Commissioning Report				
9.1.2	Insulation resistance, polarity and continuity test for all cables				
9.1.3	Earth resistance test at HT system, LV System, Feeder and Pillars. The result for earth resistance test for HT system, shall be less than 3 Ohm. Result of HT system must be endorsed by Jurutera Elektrik Kompeten. If both HT and LV earth resistance result is not achieved, contractor shall add the EC.				
	All testing report shall be compiled and submitted to the S.O.'s Representative for approval.				
10	TRAINING				
10.1	The contractor shall arrange for a proper training course for HT Switchgear, Transformer and Main Switch Board operation and maintenance to JKR Unit Tentera Negeri Perak Electrical Staff. Notes, instruction, manual etc. shall be provide for trainees.	lump sump			

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK (TAWARAN SEMUJI A)	To Collection Page	
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Item	Description	Unit	Quantity	Rate (RM)	Amount (RM)
	COLLECTION FROM PAGE F /1/7 FROM PAGE F /2/7 FROM PAGE F /3/7 FROM PAGE F /4/7 FROM PAGE F /5/7 FROM PAGE F /6/7 FROM PAGE F /7/7				
PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK (TAWARAN SEMULA)					
				To "Ringkasan Tender"	

BILL G: PROVISIONAL SUM

[illegible]

PEMBINAAN PENCAWANG ELEKTRIK 11KV DAN SISTEM VOLTAN RENDAH DI KEM PULMAT TAIPING, PERAK
(TAWARAN SEMULA)