

BAHAGIAN BANGUNAN DAN PEMELIHARAAN
KEMENTERIAN HAL EHWAL UGAMA
NEGARA BRUNEI DARUSSALAM

TAWARAN SEBUT HARGA

BIL. SEBUT HARGA: KHEU / BDP / 164 / 025 / 2025

TERM CONTRACT FOR ELECTRICAL MAINTENANCE WORKS TO SEKOLAH UGAMA (ARAB) MENENGAH PEREMPUAN RAJA ISTERI
PENGIRAN ANAK HAJAH SALEHA, KG KATOK AND SEKOLAH ARAB SULTAN HAJI HASSANAL BOLKIAH, KG RIMBA, BRUNEI
DARUSSALAM FOR A PERIOD OF TWELVE (12) MONTHS

TARIKH TUTUP TAWARAN : 30th
23 April 2025 Jam 2.00 PM

Syarat-syarat untuk mengikuti tawaran kerja sebut harga adalah seperti berikut :

1. Tawaran hanyalah dipelawa kepada syarikat / pemborong yang berdaftar dengan Kementerian Pembangunan
Kelas III dan Kategori E01 SAHAJA di Negara Brunei Darussalam.
2. Tawaran-tawaran mestilah dibuat di atas borang-borang tawaran yang tercetak oleh Kementerian ini dan penerangan lanjut bagi mengikuti sebut harga bolehlah datang terus ke Unit Penyelaras dan Pemantauan Projek, Bahagian Bangunan Dan Pemeliharaan, Bangunan Pasar Basah, Jalan Residency, BS8111, Kementerian Hal Ehwal Ugama, Negara Brunei Darussalam.
3. Bagi Syarikat / Pemborong yang berminat untuk mengikuti tawaran sebut harga hendaklah mengikut proses-proses pembelian tawaran sebut harga seperti berikut:
 - i. Syarikat / pemborong hendaklah menyertakan salinan Sijil Pendaftaran 16 dan 17 yang dikeluarkan oleh Bahagian Pendaftaran Syarikat-Syarikat, Jabatan Peguam Negara, Negara Brunei Darussalam dan juga menyertakan salinan Sijil Pendaftaran Kontraktor Dan Pembekal, Kementerian Pembangunan, Negara Brunei Darussalam yang masih sah laku.
 - ii. Syarikat / pemborong hendaklah membuat pembayaran B\$5.00 di Bahagian Kewangan, Tingkat 1, Kementerian Hal Ehwal Ugama atau melalui BIBD Online Payment bagi pembelian tawaran sebut harga.
 - iii. Setelah membuat pembayaran dan mendapatkan Resit Pembayaran bagi pembelian tawaran sebut harga, syarikat / pemborong hendaklah memuat turun (download) dokumen tawaran sebut harga di laman sesawang Kementerian Hal Ehwal Ugama: <https://www.mora.gov.bn/SitePages/Senarai%20Sebutharga.aspx>.
4. Borang-borang tawaran sebut harga hendaklah diisi dengan lengkap dan memasukkannya ke dalam sampul surat yang bertutup rapi ('Sealed Envelope') dengan menyertakan Salinan Resit Pembayaran, Sijil Pendaftaran 16 dan 17 dan Sijil Pendaftaran Kontraktor Dan Pembekal, Kementerian Pembangunan serta menulis Bilangan Tawaran, Nama Tawaran dan Tarikh Tutup tanpa membubuh sebarang pengenalan atau identiti syarikat atau pemborong.
5. Semua tawaran hendaklah dimasukkan ke dalam

Peti Kotak Sebut harga
Tingkat 1 Bahagian Kewangan,
Bangunan Ibu Pejabat
Jalan Menteri Besar
Kementerian Hal Ehwal Ugama
Negara Brunei Darussalam

6. Tawaran yang diterima lewat dari tarikh dan masa yang telah ditetapkan atau tawaran yang tidak lengkap, tidak akan dilayan atau diterima dan ianya tidak sah.
7. Kerajaan Kebawah Duli Yang Maha Mulia Paduka Seri Baginda Sultan Dan Yang Dipertuan Negara Brunei Darussalam melalui Kementerian Hal Ehwal Ugama, Negara Brunei Darussalam, tidak akan terikat untuk memilih sebarang tawaran yang lebih murah atau yang difikirkan tidak munasabah.


(Ar. HAJI AWANG AZMI BIN HAJI AWANG TAHIR)
Ketua Bahagian Bangunan dan Pemeliharaan
Kementerian Hal Ehwal Ugama
Negara Brunei Darussalam



MINISTRY OF RELIGIOUS AFFAIRS
JALAN MENTERI BESAR, BERAKAS BB33910
NEGARA BRUNEI DARUSSALAM

QUOTATION NO.: KHEU / BDP / 164 / 020 / 2025

PROJECT : TERM CONTRACT FOR ELECTRICAL MAINTENANCE WORKS TO SEKOLAH
UGAMA (ARAB) MENENGAH PEREMPUAN RAJA ISTERI PENGIRAN ANAK
HAJAH SALEHA, KG KATOK AND SEKOLAH ARAB SULTAN HAJI HASSANAL
BOLKIAH, KG RIMBA, BRUNEI DARUSSALAM FOR A PERIOD OF TWELVE
(12) MONTHS

CLASS : III

CATEGORY : E01

CLOSING DATE : WEDNESDAY ^{30th} 23 APRIL 2025 NOT LATER THAN 2.00 PM

SUBMISSION : PETI KOTAK SEBUT HARGA
TINGKAT 1 BAHAGIAN KEWANGAN
BANGUNAN IBU PEJABAT
JALAN MENTERI BESAR
KEMENTERIAN HAL EHWAL
NEGARA BRUNEI DARUSSALAM



TERM CONTRACT FOR ELECTRICAL MAINTENANCE WORKS TO SEKOLAH UGAMA (ARAB) MENENGAH PEREMPUAN RAJA
ISTERI PENGIRAN ANAK HAJAH SALEHA, KG KATOK AND SEKOLAH ARAB SULTAN HAJI HASSANAL BOLKIAH, KG RIMBA,
BRUNEI DARUSSALAM FOR A PERIOD OF TWELVE (12) MONTHS

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* - Buang jika tidak perlu



TERMS AND CONDITIONS OF TENDERING (FOR QUOTATION WORKS)

1. Before tendering, the tenderer shall visit the site where the Works are to be carried out and shall also carefully examine the relevant Terms and Conditions of Contract, Drawings, Specification and all other accompanying schedules, etc.

If there is any ambiguity in or discrepancy between any of the documents, he / she should refer the matter to the Contract Administrator (C.A.), Building and Maintenance Section, Ministry of Religious Affairs. The C.A.'s decision shall be final and binding upon the Contract.

On tendering, the tenderer shall be deemed to have examined the documents referred to above and shall be bound by the terms and conditions therein.

2. Every tenderer must submit together all documents listed below and this requirement shall be strictly adhered to prior to any consideration :-

- (a) Copy of Receipt payment for the Quotation document from the Finance Section, Ministry of Religious Affairs.
- (b) Valid Tenderer's Registration Certificate from the Ministry Of Development.
- (c) Business Enactment Act Section 16 & 17.
- (d) The Tender Form **MUST be signed by the Owner, or the Director of Shareholder(s) of the Company** stating their post and stamped with the Company's Official seal as detailed in the Business Enactment Act Section 16 & 17 / or the tenderer's Registration Certificate from the Ministry of Development.
- (e) The address indicated must be detailed as in the Business Enactment Act Section 16 & 17 / and/or Tenderer's Registration Certificate from the Ministry Of Development. Any changes to the above must be officially referred to the Registrar of Companies and Business Names and a copy must be submitted to this department.

Tender documents must be duly completed, signed and dated written in **blue ink ONLY**. Any tender which is incomplete or unsigned will render the tender to be rejected.

3. (a) Tenders and documents in connection therewith as specified above , must be delivered to the place at or before the time specified.
- (b) In the case of the tender not being delivered by hand, the tenderer must arrange for his / her tender and other documents to be posted in time to reach the stipulated place by not later than the time stated.
- (c) In no case will the Government be responsible for any expense or loss incurred by a tenderer in the preparation of this tender.

Tenders shall remain valid for **3 MONTHS** from the final date for submission of the tenders and no tenderer may withdraw his/her tender within that period. The Government reserves the right to extend this period if deemed necessary provided that such extension of the tender validity period shall have the written consent of the tenderers.

4. The Government does not bind itself to accept the lowest and/or any tender and no reason will be given for rejecting any tender thereof.
5. Every correspondence to be given to a tenderer may be posted to the tenderer's address in the tender and such posting shall be deemed good and legally binding in service of such correspondence.
6. The tender shall be made on the basis of the rates in the tender documents being firm and not subject to any adjustment with variations in quantities.
7. The tender fee shall be **BS 5.00**. Payment shall be made at Finance Section, 1st Floor, Ministry of Religious or BIBD Online Payment.
8. No unauthorised alteration or use of 'correction pen' in the tender documents is allowed, or the tender may be rejected. Any errors are to be struck off and initialled.
9. Non-compliance with the above terms and conditions in any respect may render the tender liable to be rejected.

10. The tender must be done in the **OFFICIAL PRINTED** tender forms which is available from the **Ministry of Religious Affairs official website:** <https://www.mora.gov.bn/SitePages/Senara%20SebutHarga.aspx>

The completed tender documents are to be lodged on or before 2.00 PM on 30th April 2025 in a sealed enveloped addressed to:-

TENDER / QUOTATION (QTN) BOX

**PETI KOTAK SEBUT HARGA
TINGKAT 1 BAHAGIAN KEWANGAN
BANGUNAN IBU PEJABAT
JALAN MENTERI BESAR
KEMENTERIAN HAL EHWAL
NEGARA BRUNEI DARUSSALAM**



The top part of the sealed envelope must be written stating the following :-

Quotation No. : **KHEU / BDP / 164 / 020 / 2025**

Quotation Closing Date : 30th April 2025

Project Title : **TERM CONTRACT FOR ELECTRICAL MAINTENANCE WORKS TO SEKOLAH UGAMA (ARAB) MENENGAH PEREMPUAN RAJA ISTERI PENGIRAN ANAK HAJAH SALEHA, KG KATOK AND SEKOLAH ARAB SULTAN HAJI HASSANAL BOLKIAH, KG RIMBA, BRUNEI DARUSSALAM FOR A PERIOD OF TWELVE (12) MONTHS**



Quotation No. : KHEU / BDP / 164 / 020 / 2025

Closed on : 28 April 2025

PART A - AGREEMENT

(or),

At Schedule of Rates attached subject to the adjustment percentage of an additional (+) / a deduction (-)*
% with an approximate Maximum Contract Sum as stated in PART C - APPENDIX Item 6.0.

And,

within the Contract Period 12 Days / ~~Weeks~~ / Months * in accordance with the terms and conditions below
below.

2.0 Owner / Director's : _____
Signature & Name (_____
IC No. : _____

2.1 Signature & Name of Witness : _____
IC No. : _____

2.2 Company Address : _____

2.3 Tel. No. : _____ Fax No. : _____
2.4 Date : _____ Email : _____

Company Stamp

Note : An asterisk * indicates text that is to be deleted as appropriate



PART B - TERMS OF QUOTATION

1.0 BASIS OF QUOTATION, OVERALL OBLIGATIONS AND ADMINISTRATION

1.1 Overall Obligations of the Government:

- 1.1.1 To provide access at proper times for the Contractor to do his work.
- 1.1.2 To provide all information and facilities stated in this Contract to enable the Contractor to do his Works.
- 1.1.3 To pay the Contractor as provided in this Contract.
- 1.1.4 To assign a Contract Administrator to administer this Contract.
- 1.1.5 May take out or renew collateral warranty and insurance as referred to in Clause 1.2.3 and Clause 1.2.4 below if the Contractor fails to do so.

1.2 Overall Obligations of the Contractor:

- 1.2.1 To finish the Works to the quality standards provided in this Contract within the Completion Date(s) and Contract Period provided in this Contract.
- 1.2.2 To cooperate with all other Contractors working on the project and not to disrupt them or cause damage to their Works.
- 1.2.3 To provide a collateral warranty containing a similar obligation as under this Contract directly to a third party if requested by the Contract Administrator.
- 1.2.4 To provide and maintain valid Contractor's all risks insurance policy at all times.

1.3 Instructions, Certifications & Job Orders

- 1.3.1 The Contract Administrator can issue instructions and certifications including Job Orders to the Contractor on anything relating to the Works.
- 1.3.2 All instructions, certifications and Job Orders must be in writing, dated and clearly identified as Contract Administrator's Instructions, Certifications and Job Orders.
- 1.3.3 For each Job Order, the Contract Administrator must state a commencement date and a reasonable date for its completion and the Contractor must complete each Job Order by that completion date.
- 1.3.4 The minimum and maximum of any one Job Order to be issued as stated in the Appendix Item 5.0 and the maximum to be issued must be capable of being carried out and completed within the Contract Period.
- 1.3.5 The Contractor must comply with all instructions, certifications and Job Orders issued by the Contract Administrator.
- 1.3.6 The Contract Administrator may arrange others to complete the Works if the Contractor fails to comply with Clause 1.3.5, and the Contractor shall pay for all extra costs incurred.

2.0 QUALITY, HEALTH, SAFETY AND ENVIRONMENT

2.1 Quality

- 2.1.1 The Contractor must do his Works based on the documents referred to in this Contract and other instructions and information given to him by the Contract Administrator.
- 2.1.2 If any of the Works is not done according to this Contract or if there is any other breach of this Contract by the Contractor, the Contract Administrator shall inform the Contractor of the shortfall(s) in writing. The Contractor must rectify the shortfall(s).
- 2.1.3 If the Contractor does not rectify the shortfall(s), the Contract Administrator may arrange others to rectify the shortfall(s). The Contract Administrator can also certify either:
 - (a) The cost of rectifying such shortfall(s); or
 - (b) The reduced value of the completed Works due to such shortfall(s)as provided in the Payment Certification Clause.
- 2.1.4 The Contract Administrator can continue to do this throughout the project and during the Defects Liability Period (as stated in the Appendix Item No. 3.0) after the Contract Administrator confirms the Works is complete as provided in the Completion Clause.

2.2 Health, Safety And Environment

- 2.2.1 The Contractor must keep the site clean and safe at all times.
- 2.2.2 The Contractor must comply with all laws and regulations relating to Health, Safety and Environment Act, if any.

3.0 TIME OBLIGATIONS

3.1 Starting, Progress and Finishing

- 3.1.1 If not stated in this Contract, the Contract Administrator will inform the Contractor when to start work in writing. The Contractor shall not be entitled to claim for any loss or damage caused by any delay of possession of site.
- 3.1.2 The Contractor must progress with the Works in a regular and diligent manner.
- 3.1.3 The Contract Administrator can instruct the Contractor to stop and restart at any time.
- 3.1.4 The Contractor must finish all the Works within the Completion Date(s) stated in this Contract or as instructed by the Contract Administrator.



3.2 Adjusting Time for Completion

- 3.2.1 If the Government or Contract Administrator or anyone within either of their responsibility or control (which includes other Contractors on site), or anything beyond the Contractor's control, disrupts the Contractor from finishing within the completion period, the Contract Administrator must assess the impact of this disruption on the Contractor's Works.
- 3.2.2 If any Completion Date(s) is affected the Contract Administrator must adjust the Completion Date(s).
- 3.2.3 This must be done in a written certificate clearly identified as Extension of Time Certificate.

3.3 Completion

- 3.3.1 When the Contractor practically completed all the Works, he shall inform the Contract Administrator stating he has completed.
- 3.3.2 The Contract Administrator must decide when the Works has actually practically completed by the Contractor.
- 3.3.4 The Contract Administrator must decide when all obligations of the Contractor are fully discharged.
- 3.3.5 This decision must be in a written certificate clearly identified as a Final Completion Certificate.
- 3.3.6 This must be done after the end of Defects Liability Period (as stated in the Appendix Item No. 3.0) or when the Contractor has rectified all the shortfall(s) including Works that is not according to this Contract and any other breach of Contract by the Contractor identified by the Contract Administrator, whichever is later.

3.4 Delayed Completion

- 3.4.1 If the Contractor does not finish by the date stated in the Contract or Job Order, he shall pay Liquidated and Ascertained Damages due to the delay to the Government as provided in the Payment Certification Clause.
- 3.4.2 Liquidated Damages is calculated for delay between when the Contractor should have completed the Works and when he actually completed the Works.

4.0 VARIATIONS TO WORK

- 4.1.1 The Contract Administrator can issue instructions to vary the Works to be done.
- 4.1.2 If the Contract Administrator instructs the Contractor to vary any of the Works and there is a financial impact, the Contract Administrator must certify the value of the variation work as provided in the Payment Certification Clause.
- 4.1.3 The Contract Administrator must value the variation work using the Summary of Works rates and/or adjusted Schedule of Rates. If neither are available then using fair market rates.
- 4.1.4 This shall be done in a written certificate clearly identified as Variation Order certificate.

5.0 PAYMENT CERTIFICATION

5.1 Claims and Payment Certificate

- 5.1.1 The Contractor must submit a claim for the Works done before any payment certificate can be issued.

5.2 Contents of Payment Certificate:

- 5.2.1 The payment certificate must include the following:
Add the following:
 - (a) Cumulative value of the Works done. This is valued based on Summary of Works rates and/or adjusted Schedule of Rates, if any. If none, then valued based on fair market rates.
 - (b) Value of variation work properly instructed by the Contract Administrator and properly done by the Contractor.
- 5.2.2 Deduct the following:
 - (a) Liquidated and Ascertained Damages which is calculated for delay between when the Contractor should have completed the Works and when he actually practically completed the Works.
 - (b) The value of any shortfall(s) due to Works done according to this Contract or due to any other breach of this Contract by the Contractor which the Contract Administrator has informed the Contractor. If the Contractor does not rectify the shortfall(s) the Contract Administrator can certify either:
 - (i) The cost of rectifying such shortfall(s) by others; or
 - (ii) The reduced value of the completed Works due to such shortfall(s) as stated in the Appendix.
 - (c) A percentage of the sum of total additions above will be retained (as the Retention Sum) and released after the end of Defects Liability Period or when the Contractor rectified all the shortfall(s) including Works that are not done according to this Contract and any other breach of contract by the Contractor identified by the Contract Administrator.



- (d) The Net Amount Payable is the amount the Government must pay to the Contractor. This is calculated by:
 - (i) Adding the total under additions above;
 - (ii) Deducting the total of all deductions above; and
 - (iii) Deducting the cumulative amount certified previously.
- (e) The Contract Administrator may deduct any monies owed by the Contractor to the Government under this Contract or any contract(s) from the Contractor's payments.

6.0 TERMINATION OF CONTRACT

6.1 If the Contractor:

- (a) Suspends the Works before completion without any reasonable cause; and/or
- (b) Fails to proceed with the Works within the time stated in the Contract Administrator's Instructions; and/or
- (c) Fails to comply with the Contract Administrator's Instructions;

for fourteen (14) days after a notice sent to the Contractor, the Contract Administrator can determine this Contract by a written notice.

6.2 If the Contractor:

- (a) Becomes bankrupt; or
- (b) Goes into liquidation; or
- (c) Has offered or given or agreed to give to any person any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forbore to do any action in relation to the obtaining or execution of this Contract with the Government, or for showing or forbearing to show favour or disfavour to any person in relation to this Contract or any other contract with the Government or the like acts shall have been done by any person employed by the Contractor or acting on his behalf (with or without the knowledge of the Contractor), or if, in relation to this Contract or any other contract with the Government, the Contractor, or any person employed by the Contractor or acting on his behalf shall have committed or abetted to commit an offence under the Prevention of Corruption Act (Chapter 131) or section 161, 162, 163, 164, 165, 213, 214 or 215 of the Penal Code (Chapter 22).

this Contract is terminated by a written notice.

- 6.3 In either (6.1) or (6.2) above, the Contract Administrator may complete the Works by other ways and the Contractor shall pay for all extra costs incurred.

6.4 Termination For Convenience

- (a) The Government may at any time, give the Contractor a written notice to terminate the employment of the Contractor under the Contract and the Contractor shall immediately or upon such other date as specified in the written notice;
 - (i) cease all works under the Contract, which shall include, but be not limited to such work for the purpose of protecting, making safe or tidying up such part of the works as may already have been executed, or may be in the course of execution.
 - (ii) vacate the site, remove all his plant, tools, equipment, goods and unfixed materials which have not been paid by the Government and handback possession of the site to the Government.
- (b) In the event of termination under this Clause, Contract Administrator shall certify the amounts payable to the Contractor and the Contractor shall provide all reasonable assistance to the Contract Administrator. In the event that the Contractor does not submit the necessary information required, the Contract Administrator shall make his certification on the information available. The amount certified shall be paid by the Government less any sums previously paid or due to or recoverable by the Government from the Contractor.



PART C - APPENDIX

1.0	<p>Completion Date:</p> <p>(If not stated, to be instructed by the Contract Administrator. If more than one completion period, identify the scope of Works for each completion period)</p> <p>For Term Contract, the Contract shall ends when the following conditions are met:</p> <p>(a) The actual expiration of the Contract Period; or</p> <p>(b) The limit of the Approximate Maximum Total Value of All Job Orders have been reached;</p> <p>Whichever of the above comes first but subject to Clause 3.2 and Clause 4.0.</p>	<p>_____</p>
2.0	<p>Liquidated and Ascertained Damages (LAD):</p> <p>(If none stated, then the Contract Administrator may certify a reasonable sum as compensation for delay)</p> <p>$\frac{\text{Total Contract Sum}}{\text{Total Contract Period (No. of Days)}} \times 15\%$</p>	<p>B\$ _____ per day</p>
3.0	<p>Shortfalls / Defects Liability Period:</p> <p>(If none stated, SIX (6) MONTHS from the date of completion)</p>	<p>_____ Months</p>
4.0	<p>Retention Sum:</p> <p>(If none stated, FIVE (5%) PERCENT of the Contract Sum)</p>	<p>_____ % of the Contract</p>
5.0	<p>Minimum and Maximum Values of Job Orders:</p> <p>Minimum value of any one Job Order to be issued</p> <p>Maximum value of any one Job Order to be issued</p> <p>(If none stated, the maximum value to be issued must be capable of being carried out and completed within the Contract Period)</p>	<p>≤ B\$ _____</p> <p>≥ B\$ _____</p>
6.0	<p>Approximate Maximum Total Value of All Job Orders for the Contract Period:</p> <p>(If not stated, NOT MORE THAN \$50,000.00 - BRUNEI DOLLARS FIFTY THOUSANDS)</p> <p>The Contract Administrator gives no warranty or undertaking as to the actual amount of Works that will be issued through Job Orders and no variance in the actual value of Works ordered shall give rise to a change in any rate, price or percentage adjustment.</p>	<p>≤ B\$ 50,000.00</p>



DECLARATION FORM



BORANG PENGAKUAN
DECLARATION FORM

BILANGAN SEBUT HARGA (<i>QUOTATION NO.</i>)	: KHEU / BDP / 164 / 020 / 2025
TAJUK SEBUT HARGA (<i>QUOTATION TITLE</i>)	: TERM CONTRACT FOR ELECTRICAL MAINTENANCE WORKS TO SEKOLAH UGAMA (ARAB) MENENGAH PEREMPUAN RAJA ISTERI PENGIRAN ANAK HAJAH SALEHA, KG KATOK AND SEKOLAH ARAB SULTAN HAJI HASSANAL BOLKIAH, KG RIMBA, BRUNEI DARUSSALAM FOR A PERIOD OF TWELVE (12) MONTHS
KEMENTERIAN / JABATAN (<i>MINISTRY / DEPARTMENT</i>)	:

Saya/Kami, (Isikan nama setiap pemilik syarikat/pemegang saham di bawah)
I/We (Fill in all the proprietor/shareholders' name below)

Bil. No.	Nama Name	No. Kad Pengenalan Brunei & Warna/ No. Paspas Antarabangsa <i>Brunei Identity Card No. & Colour/ International Passport No.</i>	Tandatangan Signature

Dengan ini membuat PENGAKUAN seperti berikut / *make the following DECLARATION:*

1. Saya/Kami yang bernama diatas, adalah pemilik berdaftar sebuah Firma yang bernama
I/We as the name stated above, a registered Proprietor of _____, (isikan nama Firma/ *fill in the firm's name*)
dengan alamat perniagaan di,
with its place of business at

(atau/ *or*)
2. adalah pemegang saham dalam sebuah Syarikat yang bernama
a shareholder in a Company _____, (isikan nama Syarikat/ *fill in the Company's name*)
dengan alamat perniagaan di,
with its place of business at

yang ikut serta Sebut harga di atas, dengan ini mengakui bahawa saya atau ahli keluarga saya tidak ada kepentingan dalam lain-lain syarikat yang turut serta menghadapkan tawaran yang sama.
Which participate in the above mention tender, hereby declare that I or any member of my family do not have any interest in the other companies competing for the same tender.

Tandatangan & Cop Syarikat
(*Signature & Company Stamp*)



DF/1

SPECIFICATION



ELECTRICAL WORKS**1. DEFINITIONS**

BCSCCG	- Bayonet Cap, Shade Carrier, Cord Grip
DP	- Double Pole
ES	- Edison Screw
GES	- Goliath Edison Screw
HSOS	- House Service Overhead System
IEE	- Institute of Electrical Engineers
IET	- Institution of Engineering and Technology
LED	- Light Emitting Diode
MCI	- Malleable Cast Iron
PVC	- Polyvinyl Chloride
QMB	- Quick Make and Break
SISIR	- Singapore Institute of Standards and Industrial Research
SP	- Single Pole
SWG	- Standard Wire Gauge
VRI	- Vulcanized Rubber Insulated

2. CLASS OF WORK

All work shall comply with this Specification and be finished complete and ready for service, to the entire satisfaction of the Superintending Officer and in such sections and manner as to suit building operations or the convenience of occupants.

All work shall conform to the best principles of modern practice and be executed by fully qualified electrician.

Installations shall comply, except as modified herein, with:

- a) the latest local regulations for electrical equipment in building.
- b) the latest local issue of the IEE/IET regulations.
- c) the local Electricity Authority's regulations.
- d) the requirements of the Brunei Fire Rescue Department.
- e) all local regulations for the safety of the public.

3. MATERIALS

All materials shall be of approved manufacture and shall comply, except as modified herein, with:

- a) British Standard – Where a British Standard specified in this section is no longer applicable the latest British Standard that supersedes the Standard specified herein is applicable.
- b) British Standard European Norm BS EN 62305.
- c) (i) All materials, fittings, appliances and accessories shall be uniform of their kind throughout an installation, suitable for the electricity supply to which they are connected, and similar parts shall be interchangeable
(ii) All items covered by this Specification shall be subjected to inspections and test of materials and workmanship prescribed in the Specifications and the "Conditions of Contract" issued with it, unless otherwise specified, inspections and tests considered necessary will be carried out by the Superintending Officer.

The Contractor should submit to the Superintending Officer a detail of the items it is proposed to use, stating maker's name and catalogue numbers. The Superintending Officer will decide whether inspection of the stores shall be waived, inspection made at the Manufacturer's or Contractor's premises, or whether samples are to be submitted to him for approval.

When samples are called for by the Superintending Officer those approved will be retained by him as a standard for inspection of bulk supplies for sub-sequent incorporation. Samples not approved will be returned to the Contractor who will be required to furnish further samples.



- d) All "MK" references refer to "Catalogue of Wiring Accessories", by MK Electric, The Arnold Centre, Paycocke Road, Basildon, Essex SS14 3EA, Telephone: +44 (0)1268 563000.
- e) All "LEB" references refer to product catalogues by Leader Electrical Appliances Mfg. Sdn. Bhd., Lot 465 & 466, Mk. 12, 14200 Sungai Bakap, Butterworth, Penang Malaysia, Telephone: +604-582 5888.
- f) All "Goodlite" references refer to product catalogues by United U-Li Goodlite Sdn. Bhd., Lot 44, Jalan Cetak, Tasek Industrial Estate, 31400 Ipoh, Perak, Malaysia. Telephone: + 605 545 1411.
- g) All "Crabtree" references refer to product catalogues by Electrium Sales Limited, Commercial Centre, Lakeside Plaza, Walkmill Lane, Bridgtown, Cannock, WS11 0XE, United Kingdom, Telephone: + 01543 455000.
- h) All "Clipsal" references refer to product catalogues by Clipsal by Schneider Electric, Dharug Country 2 Banfield Rd, Macquarie Park NSW 2113, Telephone: 13 SEAU (13 73 28).
- i) All "Samcom" references refer to product catalogues by Samcom Electronics Pte. Ltd., 7, Kaki Bukit Road 1, #01-11 Eunoss Technolink, Singapore 415937, Telephone: +65 6744 1100.
- j) All "Fael Luce" references refer to product catalogues by Fael Spa, Via Euripide, 12/14 Agrate Brianza, 20864 Italy, Telephone: +39 039 63411.
- k) All "Galvapole" references refer to product catalogues by Galvapole Industries Sdn. Bhd., No. 9, Jalan Kecapi 33/2, Jalan Bukit Kemuning, Elite Industrial Estate, 40350 Shah Alam, Selangor, Malaysia, Telephone: +603-5121 3300.
- l) All "Stiebel Eltron" references refer to STIEBEL ELTRON, Inc., 242 Suffolk Street, Holyoke, MA 01040, United States, Telephone: +1 413 535 1734.
- m) All "Legrand" references refer to product catalogues by Legrand, 17 Neythal Road, Singapore 628582, Telephone: +65 6416 1561.
- n) All "Osram" references refer to product catalogues by Osram Singapore Pte. Ltd., Block 988 Toa Payoh North, #03-01 & #03-07/08, Singapore 3190002, Telephone: +65 6552 0110.
- o) All "Hager" references refer to product catalogues by Hager Electro Systems Pte.Ltd., 12, Tai Seng Street, #06-01B Luxasia Building, Singapore 534118, Telephone: +65 6383 1030.
- p) All "Furse" references refer to product catalogues by Furse, Wilford Road, Nottingham, NG2 1EB, United Kingdom, Telephone: +44 (0) 115 964 3700.
- q) All "Neo-Neon" references refer to product catalogues by Neo-Neon, Gong He Town, He Shan City, Guang Dong Province, PRC 529728. Telephone: +86 750 8300941.
- r) All "Nikkom" references refer to product catalogues by Success Electronics & Transformer Manufacturer Sdn. Bhd., No. 3, 5 & 7, Jalan TSB 8, Taman Industri Sungai Buloh, 47000 Sungai Buloh, Selangor Darul Ehsan, Malaysia, Telephone: +603 6279 2800.
- s) All "Davis Lighting" references refer to product catalogues by Davex Australia Pty Ltd, 31 Beal Street, Meadowbrook, Qld 4131, Australia, Telephone: +61 (7) 3712 8988.
- t) All "KDK" references refer to product catalogues by KDK Fans (M) Sdn. Bhd., 3rd Floor, 15 Jalan Tandang, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia, Telephone: +603 7785 5011.



- u) All "Khind" references refer to product catalogues by Khind Marketing (M) Sdn. Bhd., No.2, Jalan Astaka U8/82, Seksyen U8, Bukit Jelutong, 40150 Shah Alam, Selangor Darul Ehsan, Malaysia, Telephone: +603 7847 1900.
- v) All "OBSTA" references refer to product catalogues by OBSTA, 29 Boulevard Edgar Quinet, 75014 Paris, France, Telephone: +33 141235010.
- w) All "Starkeys" references refer to product catalogues by Starkeys Products, 4 Tesla Link, Wangara, WA, 6065 Australia, Telephone: +61 (08) 9302 2088.
- x) All "Honeywell" references refer to product catalogues by Honeywell International Inc., 8008 Corporate Center Dr, Suite 120, Charlotte, North Carolina, United States, Telephone: +1 (480) 353 3020.
- y) All "Petrel" references refer to product catalogues by Petrel Limited, 22 Fortnum Close, Mackadown Lane, Kitts Green, Birmingham, West Midlands, B33 0LB, United Kingdom, Telephone: +44 121 783 7161
- z) All "Tridonic" references refer to product catalogues by Tridonic GmbH & Co KG, Färbergasse 15, 6851 Dornbirn, Austria, Telephone: +43 5572 3950.
- aa) All "Vossloh-Schwabe" references refer to product catalogues by Vossloh-Schwabe Deutschland GmbH, Stuttgarter Straße 61/1, 73614 Schorndorf, Germany, Telephone: +49 7181 80020.
- bb) All "USHA" references refer to product catalogues by Usha International Ltd., Plot No 15, Institutional Area Sector-32, Gurgaon, 122001 India, Telephone: +91 124 4583100.
- cc) All "Wington" references refer to product catalogues by Wington Fan Industry Ltd., 18 Kam Shing Industrial Building 1-11 Kwai Wing Road Kowloon, Hong Kong, Tel: (852) 2410 9038.
- dd) All "Megamen" references refer to product catalogues by Neonlite Distribution Limited, Unit 1907, 19F/F, Lu Plaza, 2 Wing Yip Street, Kwun Tong, Kowloon, Hong Kong Tel (852) 2305 1722
- ee) All "CATA" references refer to product catalogues by Cata Electrodomeotics India(P) Ltd., JSK Building, Khasra No. 349 RS, Second Floor, Sultanpur, MG Road, Metro Pillar No. 24-B, New Delhi 110030, India, Telephone: 011-47527999.
- ff) All "SharpEye" references refer to product catalogues by Spectrex Inc., 218 Little Falls Road, Cedar Grove NJ 07009, USA, Telephone: + 1 973 239 8398.
- gg) All "Menvier" references refer to product catalogues by Cooper Lighting and Security Ltd., Wheatley Hall Road, Stainforth, Doncaster, South Yorkshire, England DN2 4NB, Telephone: +44 1302 303222.
- hh) All "Mitsubishi" references refer to product catalogues by Mitsubishi Electric Asia Pte. Ltd., 307, Alexandra Road, Mitsubishi Electric Building, Singapore 159943, Telephone: +65 6473 2308.
- ii) All "SJ Lite" references refer to product catalogues by Sirijaya Industries Sdn. Bhd., No. 9, Lebuhr Perusahaan Klebang 9, IGB International Industrial Park, 31200 Chermor Perak, Malaysia, Telephone: +605 292 3888
- jj) All "Unik" references refer to product catalogues by UNIK Galvanizing & Metal Products Sdn. Bhd., Lot 36/38, Sungai Bera Industrial Estate, Seria, KB1933, Brunei Darussalam, Telephone: +673 3220181.
- kk) All "NVC Lighting" references refer to product catalogues by NVC Internantional, Building 12-3F, No. 1, Zhongzhu Road South, Science & Technology Innovation Coast, High Tech District, Zhuhai City, Guangdong Prov, China, Telephone: +852 2375 1296.
- ll) All "Lumiconnect" references refer to product catalogues by Ure Lighting Co., Ltd., Flat C, 9/F, Winning House, No 72-74 Wing Lok Street, Sheung Wan, Hong Kong, Telephone: +8615019569619.



mm) All "Meanwell" references refer to product catalogues by Mean Well Enterprises Co. Ltd., No.28, Wuquan 3rd Rd., Wugu Dist., New Taipei City 24891, Taiwan (R.O.C.), Telephone: +886222996100.

4. FIXING OF FITTINGS SWITCH AND FUSE GEAR, ACCESSORIES, ETC.

- a) All cable and conduit runs shall be kept clear of all water and gas pipes and at least 150mm clear of and if possible below steam and hot water lines.
- b) Conduit boxes shall be used for attaching ordinary fittings and accessories to conduit systems. Lighting fittings with conduit or similar suspension shall be suspended so that the weight of the fitting is not taken by the conductors.

For the attachment of very heavy fittings, the Superintending Officer will decide the method of fixing to be adopted.

On ceilings, etc., where blocks or boxes cannot be secured directly to a joist, etc. a bridging piece shall be fixed securely between the joists, for the purpose of mounting the blocks or boxes.

- c) Switch-fuses, distribution boards and meters shall be mounted on plywood boards of suitable sizes. Boards shall be free from defects and finished two coats of shellac. Fixing shall be of wood screws, coach screws or otherwise as considered necessary by the Superintending Officer.

5. CEILING FANS AND REGULATORS

- a) Ceiling fans and regulators shall normally be supplied by the Employer.
- b) Each ceiling fan and regulator shall be controlled by a local switch. Regulators and control switches shall be mounted together on a suitable plywood board.
- c) Suspension hooks (U brackets) shall be made of mild steel of not less than 13mm diameter, finished two coats of metallic paint.
- d) Ceiling fan points shall terminate with a 3 plate ceiling rose, to allow for connection of earth wire and 3-core flexible cord.
- e) The rates for ceiling fan include 5 Amp. plastic connectors.

6. WATER COOLERS AND WASH BOILERS

- a) The wiring to a water cooler or wash boiler connectors to a DC supply, shall terminate with a switched socket outlet, surface mounted indicating type, with conduit entry or bushed for PVC cables, as applicable.
- b) The wiring to a water cooler or wash boiler connected to an AC supply, shall terminate with a 13 Amp AC switched socket outlet enclosed in a metal-clad box, (conduit entry or bushed for PVC cables, as applicable) complete with lamp holder, faceted ruby lens and fused plug.

7. WATER HEATERS (AC)

- a) Water heaters (single phase) shall be controlled by a double pole switch, complete with LED indicating lamp, mounted as one unit. Rated as required for the loading. Conduit or bushed entries, as applicable. The wiring between the control switch and water heater, shall be as applicable to the system of wiring PVC cables or VRI cables enclosed in conduit. Flexible cords shall not be installed.
- b) For a water heater installed in a room containing a fixed bath or showers, the control switch shall be sited in an accessible position outside and immediately adjacent to the normal access door. In addition to the control switch, a totally enclosed pilot lamp unit shall be installed adjacent to the water heater. Conduit or gland (PVC cables), entries, as applicable.
- c) The exact position of control switches and pilot lamp units shall be as determined by the Superintending Officer.

8. STEEL CABLE TRUNKING

- a) Steel trunking shall be constructed from not less than 16 gauge mild steel of best quality.



- b) Sizes and gauges of trunking which are to manufacturer's standard shall be approved by SISIR and embossed with SISIR mark.
- c) Steel trunking shall be painted with one coat of red oxide primer and two coats of approved paint.
- d) A continuous run of 25mm wide x 3mm thick tinned copper strip shall be installed and extended to the full length of the trunking to ensure earth continuity. Jumper links will not be accepted.
- e) Trunking shall be rigidly fixed to mild steel angle hangers spaced at adequate intervals on wall or under floor slab. A suspension unit and a thrust block shall be provided at the top and bottom of each vertical run of trunking where required.
- f) When trunking passes through a fire wall or floor slab a barrier of consistence fire rating shall be installed to prevent the possible spread of fire. Joints and bends shall be so constructed that cables can be easily drawn through. The number of cables installed in each (45%) is not exceeded. The supply and installation of trunking shall be fully in compliance with the special requirements as listed in the latest SISIR CODE CP5.
- g) Trunkings shall be supplied in length to suit the installation and cover plates shall be supplied in short length for easy removal. Every entry to finished trunking shall be so placed as to prevent the ingress of water. Cover plates shall be securely fixed after wiring is completed.

9. CABLE TRAYS

- a) Cable trays shall be of the hot dipped galvanized and perforated type and constructed of not less than 17 swg galvanized sheet steel supported at 1m intervals by mild steel hangers fixed to walls and floors in an approved manner. The cable trays and the finished steel hangers shall be painted with two coats of primer and Electric Orange paint respectively prior to the installation.
- b) Long bends shall be used for all turnings. When cable tray passes through a fire or floor slab, a fire resisting barrier shall be installed to prevent the possible spread of fire.
- c) All working surfaces shall be cleaned, free from burrs, etc.

10. LIGHTING SWITCHES

- a) Lighting switches shall normally be rocker operated and of 10 Amp rating to BS 3676, with ivory moulded strong polycarbonate cover plates. All switches shall be mounted at a height of 1450mm above finished floor level or as directed by the Superintending Officer. However, due consideration must be given to heights of tiling. No switches are allowed to be located at the joint or junction of wall tiling, demountable partition or different finish. Adjacent switches must be grouped in accordance with phase sequence or as directed by the Superintending Officer.
- b) Boxes for flush mounted switches shall be galvanized mild steel to BS 4662. Boxes for surface mounted switches shall be either moulded PVC or galvanized mild steel.
- c) Switches where exposed to weather or installed near the water tank rooms shall be of weatherproof type

11. SOCKET-OUTLETS

- a) 13 Amp. 3 pin AC polycarbonate socket outlets/combined switched socket outlets to BS 1363 complete with boxes to BS 4662 and fused plug, shall normally be installed for all AC installations. Socket-outlets connected to a conduit wiring system shall be mounted in metal- clad enclosure, for other systems (PVC or VRI cables on cleats), the enclosure shall be all insulated. Socket-outlets, other than the above type, will only be installed with the Superintending Officer's approval.



- b) Socket-outlets connected to DC installation shall be of the combined switched socket-outlet type, with QMB, switch, enclosure as applicable, complete with plug (Round Pins).
- c) Socket-outlets controlled by a switch shall normally be of the combined switched socket-outlet type. When a separate switch is installed for the control of a socket-outlet, the switch rating (Amps.) shall be equal to the maximum rating of socket-outlet.

12. LIGHT FITTINGS

All light fittings shall comply with the relevant sections of BS 4533 and include 5 Amp. high temperature rated connectors.

a) Fluorescent Fittings

All fluorescent lighting fittings shall be complete with tubes, control gear, lamp holders and accessories suitable for operation at 230 Volt, single phase, 50Hz supply and shall comply with the requirements as follows:

i. Housings and Reflectors

The housing and reflector where required, shall be manufactured from best quality mild steel sheet or not less than 20 swg.

The housings shall completely enclose the control gears, wiring and accessories.

The entire housings and reflector where required, shall be specially treated to prevent rust and corrosion. One coat of anti-rust primer and two coats of finishing paint of best quality shall be applied.

The entire housings and reflector where required, shall be specially treated to prevent rust and corrosion. One coat of anti-rust primer and two coats of finishing paint of best quality shall be applied.

ii. Plastic Diffusers

Plastic diffusers shall be made of best quality plastic material recommended for lighting service equivalent to ICI Acrylic. They shall be of adequate thickness and strength to prevent sag under normal operation.

Unless otherwise stated all acrylic diffusers for fluorescent fittings shall be of the Carolite C12 Type or other equal and approved.

iii. Control Gear

The method of construction of all control gear shall comply with BS 2467 as regards to the safety aspect.

1. Ballasts

All ballasts shall be of indoor, natural cooling and polyster-filled type, Class A insulation and comply with the latest British Standards.

Ballasts shall operate without audible hum or noise and each lamp shall be completed with one ballast.

2. Capacitors

All capacitors shall comply fully with BS 4017 and shall be suitable to correct power factor to not less than 0.85 lagging.

Capacitors shall be satisfactorily withstand baking in an oven at 85 degrees Celsius for twenty-four (24) hours showing no sign of leakage or other deterioration.

3. Starters

All starters shall comply fully with BS 3772 : 1964.



The canister shall be made of high temperature matt with polypropylene and shall be electrically safe and non-corrodible. A ceramic disc type radio interference suppression capacitor shall be fitted internally to each canister. Waxed paper and foil type capacitor will not be accepted.

iv. **Fluorescent Tubes**

All fluorescent tubes shall be of bi-pin type having a diameter of 26mm and a rated life of not less than 8,000 hours. The type of tube shall be selected at a later date.

The lumen output of each type of tube shall be in compliance or better than the following requirements:

a) Initial Lumens	600	1200	1500
	18/20 W	36/30 W	58/80W
White	1150	2800	5400
Warm White	1150	2800	5300
Daylight	1100	2700	5100
b) Design Lumen	600	1200	1500
	18/20 W	36/30 W	58/80W
White	1050	2600	4900
Warm White	1050	2600	4800
Daylight	1000	2500	4800

All fluorescent tubes shall comply with the relevant British Standard Specification.

v. **Wirings**

All internally connected and control wiring except the main cables shall be of high temperature grade sleeving. The minimum size shall not be less than 2.5mm².

vi. **LampHolders**

All lamp holders shall comply with BS 1875, be of robust construction suitable for mounting standard bi-pin lamps and of the rotary type.

They shall be designed to have a firm lamp support and good electrical contact. Each holder shall be provided with a spring-loaded rotor.

All incandescent fittings shall be complete with lamps, lamp holders, glasswares and accessories. E452:E465

All general lighting service lamps shall be manufactured to BS 161 : 1968.

Unless otherwise specified, all lamps shall be suitable for operation at 240V. All lamps below 100W shall be of BC cap and above shall be of ES or GES cap.

All incandescent lamps shall be equivalent to OSRAM and have a working life of not less than 1,000 hours.

b) **LED Luminaires**

i. **Downlight Type LED Luminaire**

The luminaires shall comply with the relevant IEC Standards and other relevant standards in terms of safety and performance criteria. The luminaires shall comply to IEC 60598 Series, IES LM-79-08, IES LM-80-08, IEC 62722, IEC 62031, IEC 62471, IEC 61547, IEC 61000-3-2 and BS EN 55015 / CISPR 15.

The luminaires shall be designed and constructed that it is capable of providing the service for which is intended. It shall be manufactured under "Lighting Class LED" and shall be commercially available.

The LED luminaires shall be new and complete with LED control gear (LED driver), thermal management unit, surge and overvoltage protection and suitable for supply voltage of 230 V, + 10%, -6% at 50 Hz. The LED luminaire shall consist of two separate components comprising of LED control gear and optical system.



1. The construction of the luminaires shall be of either two separate housing/compartments or integrated.
2. The luminaire shall be shined downwards to provide uniform light distribution and it shall have adequate heat sink for heat dissipation/ thermal management.
3. All components of the luminaires shall operate well within the ratings with due consideration for the local conditions (high humidity of 95% RH and ambient temperature of 35°C)
4. Interchangeability of consumable components is preferred for maintenance purposes.
5. The luminaires in mode of operation shall not produce voltage disturbance / fluctuation to the electrical supply system.
6. The housing of the LED control gear and optical system shall be of sound and rigid construction suitable for suspended installation. A means of connecting the flexible GI conduit to the lamp control gear/luminaires shall be provided.
7. Material used for the construction of the luminaires and its component shall be recyclable.

The LED control gear shall comply to IEC 61347-2-13, IEC 62384, BS EN 55015 / CISPR 15 for radio frequency interference suppression and IEC 61000-3-2 for harmonics distortion. Rated maximum operating temperature of the LED control gear shall not exceed 70°C.

1. Harmonics distortion shall be within the limits in accordance with IEC 61000-3-2. However, total harmonics distortion shall be less than 20%. The LED control gear shall operate and maintain consistent light output over voltage variation from +10% to -6% of the rated voltage and power factor of not less than 0.9 lagging.
2. The LED control gear shall be able to withstand short circuit current, overload, over voltage, under voltage and over temperature.
3. The optical system shall incorporate one piece full bowl reflector where applicable and high power LED or LED module of required wattage and shall comply to IEC 62031 and IEC 62471. The luminaire shall continue to operate safely even though there is failure of a partial number of LEDs/LED. The LEDs/LED module lumen output shall not be depreciated to below 70% of the original output during the liability/warranty/contract period (whichever is applicable). The initial luminous flux shall not be less than 90% of the rated luminous flux.
4. There shall be no flickering of the light source in mode of operation and when it reaches its end of life.
5. The LED/LED module shall not be driven more than the rated drive current. T

The optical system support shall be made from mild steel/die cast aluminum with minimum thickness of 1.3 mm. The ring shall be made from die-cast aluminum with minimum thickness of 1.3 mm. The support and ring shall be coated with electrostatic powder. The clip shall be made from stainless steel.

1. The optical system shall comprise of optical lens reflector and glass diffuser (if applicable). It shall give good even light distribution with minimal glare in both the axial and transverse planes.
2. When applicable, the reflector shall be made of high purity anodized aluminium with at least 99.85% pure aluminium with low iridescent/iridescent free mirror finished (e.g. polished aluminium). The thickness of the reflector shall be minimum 0.5 mm.
3. Photometric data for the luminaires shall be made available and submitted. The required photometric data for the luminaires shall be Polar Curve, Utilization Factor, Luminance Distribution Table, Downward Light Output Ratio, Upward Light Output Ratio, Light Output Ratio and Spacing to Mounting Height Ratio.

Connection cables shall be terminated in a termination block marked 'L' and 'N' for connection of the incoming wires. For Class 1 Luminaires, a brass direct pressure type earth terminal shall be provided in the LED driver system near the termination block for earth connection. This earth terminal shall be clearly marked with the standard earth terminal symbol.



1. For separated optical and LED control gear, electrical connection of the LED control gear and optical system shall be through a plug and socket (i.e. male/female connection unit) It shall be made from non-flammable material and shall be rated at 10A. It shall comply to IEC 60838-2-2.
2. Heat Resistant (HR) 105°C cable shall be used to connect the optical system and LED control gear and shall be of stranded type. It shall not be more than 300 mm long. The cable shall be enclosed in a cable sleeve HR 105°C.
3. Wiring shall be done in a neat way to avoid contact with heat producing components. A means of clamping the electrical cable shall be provided. The cable clamp arrangement shall not damage the insulation of the cables.
4. Where optical and control gear system are not integrated, both the optical and control gear system shall be provided with hooks or other suitable means for hanging purposes.

The LED Downlight shall comply to the following characteristic:

Characteristic	Description		
Light Source	Lighting Class LED		
Power Supply	230V +10, -6%, 50Hz		
Correlated Colour Temperature (CCT)	2700K, 3000K, 3500K	4000K, 4500K	5000K, 6500K
Colour Rendering	≥ 80	≥ 70	≥ 70
Lumens	≥ 850	≥ 850	≥ 950
Luminaire Efficacy	≥ 75lm/W	≥ 75lm/W	≥ 75lm/W
Beam Angle	≥ 60°		
Power Consumption	≤ 20W		
Power Factor	≥ 0.90		
Ambient Temperature	-20°C to 35°C		
Rated Lifetime	≥ 50,000 hours, 70% lumen maintenance at Ta=25°C		
LED Photobiological	Exempt group (IEC 62471)		
Total Harmonic Distortion (THD)	≤ 20%		

The manufacturer shall provide a minimum 5 years period warranty certificate as stated in the defect liability/warranty/contract period (whichever is applicable) for the complete luminaire to guarantee the long life expectancy and maintenance free luminaire. Warranty declaration shall be filled and signed by manufacturer. Failure in the functioning and operation of the LED luminaire within the warranty period will result in the replacement of the whole luminaire or required components by the manufacturer at no cost to the JKR.

Illuminance test shall be carried out every six (6) months during defect liability/warranty/contract period (whichever is applicable) to ensure the performance of the installed system conform to the design requirement as per JKR specifications. This test shall also confirm the lumen maintenance of the luminaire.

1. The luminaire manufacturer shall provide calibrated illuminance meter and have the capacity and competency to carry out the illuminance test during the testing of the installed lighting system.

ii. **Conformity with Standards**

The LED luminaire shall comply with and be tested to the relevant latest edition of Malaysia Standard or other relevant international standard as below:



Item	Criteria	Relevant Standard
Safety construction & Luminaire		IEC 60598-1 Luminaires – Part 1: General requirements and tests IEC 60598-2-1 Luminaires. Part 2: Particular requirements. Section One: Fixed general purpose luminaires IEC 60598-2-2 Luminaires. Part 2: Particular requirements, Part 2- Section 2: Recessed luminaires
Safety construction &	LED driver	IEC 61347-1 Lamp control gear – Part 1: General and safety requirements IEC 61347-2-13 Lamp control gear- Part 2-13 – Particular requirement for d.c or a.c supplied electronic control gear for LED modules
	LED module	IEC 62031 LED modules for general lighting – Safety specifications
	Lamp caps and holder	IEC 60061 International recommendations regarding lamp caps and holders together with gauges for the control of interchange ability
	Lamp holder	IEC 60838-2-2 Miscellaneous lampholders – Part 2-2 – Particular requirements – connectors for LED modules
	LED lamps/module (eye protection)	IEC 62471 Photobiological safety of lamps and lamp systems

Item	Criteria	Relevant Standard
Safety construction &	LED driver	IEC 62384 DC or AC supplied electronic control gear for LED modules – Performance requirements
	LED Luminaire	IEC 62722-1 Luminaire Performance - Part 1: General Requirements IEC 62722-2-1 Luminaire Performance - Part 2-1: Particular Requirements for LED Luminaires
	Photometric	IES LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products
	LED Light Source (*by LED Manufacturer)	IES LM-80-08 Approved Method: Measuring Lumen Maintenance of LED Light Sources
	LED Light Source (*by LED Manufacturer)	IES TM 21-11 Projecting Long Term Lumen Maintenance of LED Light Sources
Safety	EMC	IEC 61547 Equipment For General Lighting Purposes-EMC Immunity Requirements IEC 61000-3-2 ELECTROMAGNETIC COMPATIBILITY (EMC) Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤16 A per phase)
Performance		CISPR 15 (BS EN 50015) Limits and Methods of Measurement of Ratio Disturbance Characteristics of Electrical Lighting And Similar Equipment



c) Testing

All light fittings shall be tested on completion of the installation for not less than three hours.

12. EARTHING

(a) Earthing, as required for the installation, shall be in accordance with the applicable section of IEE Regulations.

(b) Earthing leads may be connected to metal water pipes or metal rods (driven in the ground), as ordered by the Superintending Officer.

Where a water meter is incorporated in a water service, a suitable bond shall be provided across the meter.

Clamps used for connections to water pipes (not exceeding 95 mm dia.) shall comply with BS 951. Connections shall be painted with two coats of bitumastic paint, after inspection by the Superintending Officer.

(c) Earth wires shall be tinned stranded copper, with the following exception, minimum size of wires shall be 2.5 mm².

The earth-continuity conductor within the room containing a fixed bath or shower shall be a minimum size of 4 mm².

Earth wires shall be secured by non-ferrous staples or clips, as applicable. Staples or clips shall be spaced at intervals not exceeding 380 mm and within 100 mm of each connection or right-angled bend.

13. TESTING(a) General

All tests shall be made in the presence of and to the satisfaction of the Superintending Officer. The Contractor shall supply all necessary labour, apparatus and instruments necessary for the prescribed tests. The Superintending Officer shall be at liberty to use for testing, any instruments or testing apparatus that he may consider necessary to carry out the prescribed tests.

(b) Internal Electric Lighting And Power Installations

The following tests shall be carried out on each installation, as applicable and the results recorded in duplicate, which shall be signed by both the Contractor and the Superintending Officer.

- (i) Insulation resistance test to earth of the complete installation.
- (ii) Insulation resistance test between conductors of the complete installation.
- (iii) Continuity test of all "Ring Circuit" conductors.
- (iv) Polarity test of single-pole switches and connections to socket-outlets.
- (v) Earth continuity and earth fault loop tests of the installation, including earthing clamps.
- (vi) Resistance test of earth electrodes.
- (vii) Full load tests of lighting and power circuits.

(c) Electric Bell And Alarm Installation

Ring and indicator tests on bell and alarm circuits

(d) Overhead LT Distribution Systems

Completed installations shall be tested in accordance with the tests prescribed by the Electricity Authority and such other tests as may be required by the Superintending Officer, before being connected to the supply.



(e) Lightning Protective Systems

When the installation of Lightning Protective Systems has been completed, to the entire satisfaction of the Superintending Officer, the Contractor shall carry out the following tests in the presence of the Superintending Officer:

- (i) With all test points disconnected from earth terminations, carry out continuity resistance tests between all test points, using a continuous current of 10 Amps.
- (ii) With all test points disconnected, carry out earth resistance tests of each earth electrode. Where earth electrodes are bounded together, they shall be classified and tested as one earth termination. Earth resistance tests shall be carried out in conformity with BS EN 62305. Before the installation is finally handed/taken over, and after the above mentioned tests have been satisfactorily performed, the Contractor shall prepare and hand to the Superintending Officer a certified statement, in duplicate, showing full details and results of tests carried out.

14. BUILDERS WORKS

- a) Installation shall be deemed to include all cutting away, plugging and making good of walls, ceilings and other structural features where necessary.
- b) This work shall be of the smallest amount possible consistent with requirements and when installation is completed shall match existing surroundings and be as inconspicuous as possible.

15. PVC INSULATED AND SHEATHED WIRING SYSTEMS (SURFACE MOUNTED)**(a) General**

The system of wiring shall consist of single core PVC insulated and sheathed cables, fixed in conduits or PVC trunking (high UV resistance).

The "loop-in" method of wiring shall be employed, but approved type spur (Ring Circuit) or junction boxes may be used where specifically authorized.

Normally the cables shall be carried in conduits fixed to the surface of walls and ceilings, but where conditions permit and with the Superintending Officer's approval, cables may be fixed with battens on galvanized steel saddles and brass screws to the timber structure of a building.

(b) Cables

All cables shall be Polyvinyl Chloride Insulated and Sheathed complying with BS 6004.

Single strand conductors will not be permitted.

The minimum size of conductors shall be 1.5 mm² and the minimum size of submains, 2.5 mm².

(c) Battens

Battens shall be wrought on face and both edges, the width and thickness will depend on the size and number of cables to be mounted, as follows:

- (i) Battens up to 150 mm wide carrying single core cables up to 4 mm² shall be 10 mm thick.
- (ii) Battens up to 150 mm wide carrying single core cables over 4 mm² but under 16 mm², shall be 13 mm thick.
- (iii) All battens carrying single core cables 16 mm² or over shall be 19 mm thick.



- (iv) Battens shall be of sufficient width to allow screws securing saddles to be fixed without splitting the batten edges.
- (v) Battens secured to steel joists, beams or stanchions shall preferably be the full width of the joist, etc.

(d) Fixing Battens

- (i) Battens shall be fixed to walls, ceilings, etc. by means of 38 mm No. 10 countersunk brass screws, spaced at 610 mm intervals. Battens over 150 mm wide, two 38 mm No. 10 countersunk brass screws shall be fixed in line across the width of the batten at 610 mm intervals. Approved type fibre plugs, securely fixed, shall be used for fixing battens to concrete or brickwork.
- (ii) Battens fixed to steel work, steel joists, beams or stanchions shall be secured to the steel work by approved means.

(e) Fixing Cables

Cables shall be fixed to battens or timber structure, by means of galvanized steel saddles secured with brass screws.

- (i) Saddles shall be spaced as follows:

Nominal Cross Sec- tional Area Of Con- ductor	Standard No. & Dia. (Ins.) of Wire Forming Conductor	Max. Spacing Of Saddles	
		Hor. Runs	Vert. Runs
		mm	mm
1.5 mm ²	7/0.53	230	380
2.5 mm ²	7/0.67	230	380
4 mm ²	7/0.85	230	380
6 mm ²	7/1.04	305	380
19 mm ²	7/1.35	305	380
16 mm ²	7/1.70	380	455
25 mm ²	7/2.14	380	455
35 mm ²	7/2.52	380	535
50 mm ²	19/1.78	455	535
70 mm ²	19/2.14	455	535
95 mm ²	19/2.52	455	535
120 mm ²	37/2.03	455	535
150 mm ²	37/2.25	455	535
185 mm ²	37/2.52	455	535
240 mm ²	51/2.25	455	535
300 mm ²	61/2.52	455	535

A saddle shall be fixed within 76 mm on either side of fittings, accessories or right-angled bends.

- (ii) The maximum number of cables which may be fixed under one saddle is as follows:

1.5mm ² and up to 4mm ²	- 8 number
6 mm ² and up to 25mm ²	- 4 number
35 mm ² and over	- 2 number



(f) Erection

No diagonal routes will be permitted and only such runs as may be required to feed a point may be taken across ceilings.

Cables shall not be run as a span between beams or trusses etc. unless fixed to a timber batten.

Cables carried along or across steel joists, beams or stanchions shall be secured to a timber batten.

Where there is a change of direction likely to cause excessive pressure on any part of the cable, the cable shall be brought over a rounded support of a radius not less than six times the overall diameter of the cable.

(g) Cable Protection

- i. Cables exposed to a risk of mechanical damage or installed less than 1.83 meter above floor level, shall be protected by heavy gauge welded screwed galvanized steel conduit. All cables installed in Workshops shall be protected by similar conduit to a height of 2.4 meter from floor level. Conduit ends shall be bushed with brass bushes.
- ii. Where cables pass through a floor, wall, partition or ceiling, they shall be protected by bushed conduit and the hole made good with cement or other incombustible material, as applicable.
- iii. Where cables are laid in concrete or similar flooring, they shall be protected by welded screwed galvanized steel conduit and boxes to BS 31 galvanized or enameled, as ordered.

16. CONDUIT SYSTEMS OF WIRING**NOTES:**

This clause does not include Flameproof and Dust-proof installations.

(a) General

The system of wiring shall consist of single core PVC or VRI cables in screwed galvanized steel conduit, of not less than 19 mm diameter, chased or surface mounted as required.

The "loop-in" method of wiring shall be employed, but approved type spur (Ring Circuit) or junction boxes may be used where specifically authorized.

(b) Cables

All cables shall be single core VRI taped, braided and compounded, complying with BS No. 7 or PVC insulated and sheathed complying with BS 6004.

Single strand conductors will not be permitted. The minimum size of conductors shall be 1.5 mm² and the minimum size of sub-mains, 10 mm²

(c) Conduit And Conduit Fittings

- (i) All galvanized screwed conduit and conduit fittings shall comply with BS 31. Conduits shall be Class "B" heavy gauge screwed welded.
- (ii) Flexible metal conduits shall comply with BS 731 Part 1 and shall be used from the lighting boxes to the light fittings.
- (iii) Standard conduit boxes and covers shall be of galvanized steel, draw-in boxes tapped 32 mm and above shall be oblong. Covers shall be secured by brass screws.
- (iv) Multiple way conduit or switch boxes, instead of a series of single boxes shall be utilized at positions where more than one accessory is mounted.



- (v) Solid elbows or tees will not be permitted.
- (vi) Spacer-bar saddle plates shall be 3 mm thick for conduits up to 38 mm diameter and 5 mm thick for larger sizes of conduit. Saddle tops shall be secured by brass screws.
- (vii) All conduit, fittings and accessories shall be galvanized. Conduit boxes shall have machine faced joints between the box fitting or cover.

(d) Erection

- (viii) All conduit, fittings and accessories shall be erected before cables are drawn in. The maximum number of cables allowed in the conduits shall be in accordance with IEE Regulations.
- (ix) Conduits shall be run horizontally or vertically. Diagonal runs will not be permitted and particular attention shall be given to "sets" which shall fit as close to the walls, etc. as possible.
- (x) Conduit systems shall be erected as far as possible to avoid areas where water may accumulate from condensation. Systems not intended to be gas tight shall be self-ventilating, and drainage outlets shall be provided at any points in the installation where condensed moisture might otherwise collect.
- (xi) Surface mounted conduit shall be secured by spacer-bar saddles, except where conduit is installed on steel work.

Spacer-bar saddles shall be fixed at 1.2 metre intervals, with a saddle within 100 mm of a fitting or accessory, and secured by brass screws, minimum length 2.5 mm. Suitable metal clips, fixed at 1.2 metre intervals with a clip within 100 mm of a fitting or accessory shall be provided for fixing conduit to steelwork/

- (xii) All joints shall be such as to ensure perfect continuity and where running joints are necessary, locknuts shall be utilized.
Screwed connections shall be metal to metal. Exposed threads, and in places where galvanizing or enamelling has been damaged, shall be thoroughly cleaned and then painted with two coats of anti corrosive paint. This treatment shall be applied as the work is proceeding.
- (xiii) Conduit boxes with locknuts, shall be provided at suitable places to allow for subsequent extension without undue dismantling of the system. Conduit boxes shall be spaced so that there is not more than 9.14 metre straight run between them.
- (xiv) Connection between conduit and screwed metal boxes not provided with entry spouts, shall have a PVC bush or a brass external bush fitted inside the box secured by an external locknut.

(d) Concealed Conduit

Conduit shall be chased in walls, floors, etc. to such a depth that there is a minimum of 10 mm cover and shall be secured by means of pipe hooks fixed at 1.22 metre intervals, with a pipe hook within 100 mm of each fitting or accessory.

The covers of all boxes sunk in walls, ceilings, etc., shall fit flush with the finished surface.

Plates of flush type switches and socket-outlets shall overlap the edges of the sunk box and fit flush with the wall surface at all points.



All threads shall be coated with an approved compound before fixing and all joints shall be painted with one coat of anti-rust paint after jointing.

(e) Bonding And Earthing

All conduit systems shall be electrically continuous throughout the installation. The maximum conductivity resistance of the conduit, together with the earthing lead, shall not exceed 1 ohm.

17. FLAMEPROOF AND DUST-PROOF INSTALLATIONS

(a) Types of Installations

(i) Building containing explosives are divided into two types in regard to electrical installations, viz:

Those requiring a flameproof installation.

Those requiring a dust-proof installation.

(ii) Flameproof installation shall be installed in all buildings containing explosives, the manufacture or storage of which may involve the presence of inflammable liquids or gases.

(iii) Flameproof equipment shall comply fully with the requirements of the Superintending Officer and the Local Authorities and when applicable, BS 889.

(iv) Flameproof installations shall conform to BS 1003 – Installation and Maintenance of Flameproof and Intrinsically-safe Electrical Equipment, for industries other than coal mining.

(v) Dust-proof installation shall be installed in all buildings containing explosives not requiring a flameproof installation.

(b) Danger Buildings

(i) No electrical conductors or apparatus shall be permitted within any building in which explosive dust is liable to evolve, or nitroglycerine to be condensed, such as corning-houses, gun-cotton and cordite stores, and no apparatus shall be placed within a dusty area external to any such building unless precautions can be taken to prevent deposit of dust on the apparatus.

(ii) Subject to clause (i) light fittings may be placed in a danger building provided they are of the appropriate type complying with this Specification. Switches and fuses may be placed within a suitable entrance porch or in a room where no explosive or inflammable material is permitted and where no explosive vapour has access. Where no such position is available, they must be placed outside and adequately protected from the weather.

(c) Supply

In a danger area the pressure of the system of supply shall be such that the pressure to earth does not exceed 250 Volts. In the cases of 3-wire DC and 3-phase 4-wire AC systems, when the neutral conductor is not earthed, the pressure shall not exceed 250 Volts and an earth leakage indicating device shall be provided.

(d) Distribution

(i) The supply of electricity to a building containing explosive shall be controlled by a master switch outside the building and this switch shall be capable of isolating every conductor entering the building.

(ii) All circuits and sub-circuits shall be adequately protected against the effect of excess current or earth leakage current. In danger areas and danger buildings, earth leakage protection shall be provided where, by such provision appreciable reduction in fault setting can be secured.



- (iii) No underground main or cable for any purpose other than a service cable shall be laid within 3 metre of any danger building.
- (iv) Service connections to danger buildings shall be by cables protected by armour or iron pipes except where special conditions such as chemical contamination of the soil is likely to lead to corrosion. In these cases, cables shall be protected adequately to the satisfaction of the Superintending Officer by an approved means.
- (v) The armouring or piping shall be efficiently earthed. In the case of pipes containing non-armoured cables, precautions shall be taken against access of moisture. Cable in which bitumen is used as insulating material shall not be used.

(d) Fittings

- (i) All lighting fittings shall be so proportioned that when lamps are burning continuously the temperature of any external part shall not exceed 85 degrees Celsius.
- (ii) All lighting fittings shall be securely screwed to the metal conduit, and firmly attached to the wall or other supports. Flexible pendant fittings shall not be permitted.

(e) Conduit System Of Wiring For Flameproof And Dust-Tight Installations

- (i) All wiring shall be run on the surface of walls, etc. and sited so as to reduce to a minimum risk of accidental damage.
- (ii) Wiring shall be in VRI taped, braided and compounded cables, complying with BS No. 7 or PVC insulated and sheathed cables complying with BS 6004 enclosed in conduit, except in places where heavy condensation occurs or the fixing of conduits is impracticable.
- (iii) When specifically approved fire-rated mineral-insulated copper-sheathed cables, (MICS) complying with BS 6207 Part 1 shall be used where conduit is impracticable, for the reasons given in (b) above.
- (iv) Conduit and fittings shall be as described in Clause 14.
- (v) Where conduits pass from a danger area to a safe area, a flameproof type sealing box or barrier shall be inserted where the conduit enters the safe area.
- (vi) The joint between cover and box shall be machined flat and smooth and shall not be less than 5 mm width. Fixing screws shall be external to the joint surface.
- (vii) Drainage holes in conduit shall be closed by iron plugs, which shall be galvanized and made captive by a chain secured to the conduit. The joint between plug and conduit shall be flat and smooth and smeared with a high melting-point grease to prevent rust and ensure "dust-tightness".
- (viii) Conduit shall be screwed into conduit boxes and in the gland boxes of all other enclosures, against a shoulder provided for the purpose, and the conduit end shall be faced to ensure a tight metal joint. A machine-faced locking nut shall be provided on coupler and running joints.



18. BELL AND ALARM WIRING SYSTEMS**(a) General**

- (i) Any bell wiring connected directly (e.g., without the intervention of a double wound transformer or double wound converter) to an electricity supply system shall be installed in accordance with IEE Regulations as applicable to Electric Lighting and Power Installations, herein specified.
- (ii) Low voltage bell and alarm circuits shall be isolated electrically from the electricity supply by means of a double wound transformer or a converter, and shall not normally be subject to a pressure exceeding 15 Volts.
- (iii) Where electric bell and/or similar alarm apparatus are connected to the electricity supply system by means of a transformer or converter, the primary wiring shall be installed in accordance with IEE Regulations as applicable to Electric Lighting and Power Installations, herein specified.

(b) Low Voltage Bell And Alarm Wiring Systems

Wiring shall be installed using single core PVC insulated cables minimum size 1.5 mm². Wires shall be secured with PVC or fibre insulated staples.

The "loop-in" method of wiring shall be used throughout.

(c) Erection

- (i) Staples shall be spaced at intervals not exceeding 305 mm and shall be fixed so as to avoid damage to the insulation of the bell wires. Bell wiring secured by staples shall be strained hand tight and fixed without sag.
- (ii) Where bell wires pass through walls, floors or ceilings or are exposed to mechanical injury, they shall be protected by means of screwed steel conduit, as described, suitably bushed.
- (iii) Joints in bell wires shall normally be soldered, but approved pattern junction boxes may be used with the approval of the Superintending Officer.

(d) Siting Of Transformers, Batteries, Bells, Indicators

Transformers, batteries, bells and indicators shall be sited where they are not exposed to water, oil, steam or vapour, or to risk of mechanical damage.

(e) Mounting Of Fittings And Accessories

Ordinary bell fittings and accessories shall be mounted directly to concrete wall to approved design and finish.

19. LIGHTNING PROTECTIVE SYSTEMS (COPPER)**(a) General**

All work and materials shall conform with British Standard European Norm BS EN 62305 or later.

(e) Roof Conductors

Shall be held in position at 1.0 metre intervals by using suitable tape clip or gunmetal material. Conductors shall be fixed external to the existing buildings and internal for new buildings.



(f) Down Conductors

Shall be held in position according to BS EN 62305 by the applicable type of gunmetal tape clip. All conductors shall be fixed external to the building and follow the most direct path between the air and earth terminations. There shall be no up-turn in the down conductors and bends shall be of the largest radius possible.

(g) Test Points

Gunmetal test clamps shall be fitted to all down conductors at a point 0.91 metre above ground level, tapes shall be lapped 13 mm over full width of clamp. A high UV resistance IP 55 enclosure to "Legrand" or any approved type shall be used.

(h) Earth Terminations

The type and number of earth electrodes to be installed shall be to the latest standard and as stated on the order. Electrodes connected in parallel should be capable of isolation for test purposes. The resistance to earth of any earth termination shall not exceed 10 ohms.

(i) Fixings

Where necessary it is preferable that, gunmetal tape clips (with strap) and gunmetal ridge saddles, are fixed to ridge tiles prior to the tile being set in position.

(j) Bonding Of Metal Work

All metal work of considerable mass, situated within 305 mm per ohm. of resistance to earth of the Lightning Protective System, shall be bonded together and connected to a down conductor of the system. The term "metal work" embraces electric and water services, reinforcement fabric, metal sheets, windows, shutters, grills and similar items.

(k) Inflammable Roofs

Systems installed for the protection of structures with inflammable roofs shall comply with BS EN 62305.

20. NOTES RELATING TO THE SCHEDULE OF RATES

(a) Prices Generally

The prices for "fixing only" include removing the articles from store, completely fixing and securing the articles described, all necessary cutting and bending thereto; plugging to walls, floors and ceilings as required and the supply of ordinary nails, screws and mortar for and making good to walls, etc. at fixings. The prices also include carrying out such electrical tests as are specified or required by the Superintending Officer.

The prices for "supplied and fixed" include, in addition, the supply of the articles and materials described or included in the item and all waste arising from cutting thereto and the supply of all screws, bolts and nuts, special nails or pins, pipe hooks, saddle pieces, fixing clips, holdfasts, bakelite connector, etc.

The prices for "supplied and fixed" or "fixing only" do not include cutting away and making good to walls, floors, ceilings, woodwork, ironwork or structural steelwork, cutting chases for concealed conduit and making to same or making good painters' and decorators' work, or wood backing for TRS etc. or bell wiring.



(b) Prices Per Lighting Or Power Point Or Points

The prices per point or points are based on the following average distances between switches and fittings measured along the run of the wiring and no adjustment will be made in respect of circuits above or below these lengths:

One point controlled by one switch	15 metre
Each additional lighting point to above	5 metre
One point controlled by two-way switches	15 metre
Each additional lighting point to above	5 metre
Power point	15 metre

Prices exclude lamp fittings and switches, but include conduit boxes or wood blocks for the mounting of the lamp fittings or switches, except where the switch is a complete unit having its own box or enclosure.

(c) Prices Per Bell Point Or Points

Prices per point or points are based on the following average distances between push, bell and indicator measured along the run of the wiring and no adjustment will be made in respect of circuits above or below these lengths.

One point	- One push connected to one bell and indicator	15 metre
Two points	- Two pushes connected to same bell and indicator	21 metre
Three points	- Three pushes connected to same bell and indicator	27 metre

LIGHTING AND POWER**LIGHTING WIRING POINTS**

The rates indicated for lighting and power points include providing and fixing everything necessary for the proper execution of the work as described, and that may be required for the complete wiring from the point of supply, but exclude providing and fixing of ceiling roses, flexible cord, lighting fittings, lamp holders and shades, PVC trunking, steel tray and trunking, lamps, switches and socket outlets. The rates include for the provision of boxes for the mounting of lighting fittings and switches, except where the switch is supplied in a complete unit having its own box.

Where cables larger than 1.5 mm² PVC (3/.029) are ordered to be used, the actual difference in the Schedule Rates for the two descriptions of cable per metre run as "materials supplied only" will be allowed in addition to the rate for normal point wiring.

The rates included hereafter are for all things necessary for a complete wiring system from point of supply to light, switch or socket outlet.

The rates for conduit include the provision of all malleable iron conduit boxes and lids, all saddles and pipe hooks, all plugging and screwing and fixing complete and all bending, screwing and setting of conduits.

The rates exclude the fixing of light, switch and socket outlets and associated mild steel boxes but include the provision and fixing of malleable iron lighting outlet points.



Height Allowance

The following percentage addition shall be allowed for necessary use of scaffolding, ladder, etc.:

Floor to ceiling height between	Percentage Addition	
	Points Only	Fittings Only
6 - 10 metres	30%	15%
10 - 15 metres	40%	20%
15 - 20 metres	50%	25%



LIGHTNING PROTECTION SYSTEM**1. General**

This section of the specification shall cover the supply, installation, testing and commissioning of the lightning protection system comprising of air terminations, copper tapes, joints and bonds, testing joints, earth terminations and electrodes. The whole installation shall be carried out in accordance with BS EN 62305:2006.

All materials offered must be in accordance to the Authority for Building Control and Construction Industry (ABCI) / Department of Electrical Services (DES) / Department of Mechanical & Electrical Services (DME) approved type.

2. Air Terminations

Copper rods similar to Furze Type No. 5 with lengths as shown in the Drawings for non metallic roofs; horizontal flat bar terminations for metallic roofs.

Bond air terminations by interconnecting copper strips, using saddles similar to Furze Type No.11. Metallic projections of the roof shall be bonded to and form part of the air termination network. Where direct terminations are run on roof surfaces with special finishes, co-ordinate with the appropriate subcontractor to ensure that proper fixing and supports are arranged without damaging works of other trades.

3. Down and Bonding Conductors

Down and bonding conductors shall be copper strips 25mm(W) x 3mm(T) bonded to air terminations and brought down to the nearest earth termination by the most direct path. Ensure that when the conductors are fixed there no sharp bends or upturns.

Roof and down conductors shall be fixed with saddles similar to Furze Type No.44 with silicon bronze screws at intervals not exceeding 1 metre. As far as possible no jointing of down and roof conductors is allowed. Where joints are unavoidable they shall be mechanically and electrically effective, e.g. clamped, bolted or welded. With overlapping joints, the length of overlap shall not be less than 20mm. Contact surfaces shall be adequately tinned and tape to tape bonding clamp similar to Furze Type No.28 c/w silicon bronze screws shall be employed.

Make adjustments on site to ensure that the down conductors are run in an unobtrusive location.

4. Test Joint and Clamp

Provide bi-metallic type test clamps in positions that are convenient for testing. Test clamps shall be of screw-down pattern similar to Furze Type No.40 c/w bronze fixing screws. All test clamps shall be protected by a heavy-duty non-metallic casing from mechanical damage and hazard to persons.

5. Earth Termination and Electrodes

Electrodes shall be 15mm dia. steel cored copperweld or copperbond extensible rods in standard multiples, similar to Furze Type F60 with integral screw and socket joint, hardened steel tip and Type F63 brass or gunmetal connector clamp. Earth electrodes shall be driven to a minimum depth of 5 metre. The earth resistance of each complete earth termination measured separately, shall be less than 10 ohms. Where this is not possible to achieve by means of one earth electrode, additional electrodes shall be drive 3 metres apart. Price tendered for the installation of this lightning protection system under this contract shall be deemed to include the necessary number of earth electrodes and inter connections to obtain earthing resistance of less than 10 ohms.

Each earth termination shall be protected by an earth chamber with cover as per client's requirements.

All electrodes, copper strip and connector clamp contact surfaces shall be heavily tinned prior to connection and completion of the earth resistance tests.



PUMPS**a) General**

This section of the specification shall cover the supply, installation, testing and commissioning of the pumps along with all accessories.

Pumps are the type and performance as specified in the Schedule of Rates.

Pumps shall be factory tested before shipment. Pumps shall comply with the requirements of BS 5306, BS 599 and BS 5316.

Pumps curves with the operating point marked-on, shall be submitted for approval before the pumps are ordered.

All pumps' assemblies shall be factory aligned complete units comprising of pumps and motor, coupled together on a common base plate.

b) Mounting

Pump shall be mounted on a fabricated steel base which shall be heavily reinforced and brace to ensure correct alignment. The base plate shall be mounted on a concrete plinth of minimum 150mm height using neoprene in shear or spring. Neoprene in shear mount shall be used for situation where the plinth is located on the ground and spring vibration isolation mounts shall be used where the pump is installed on a suspended slab.

The number and type of vibration isolators selected shall be such that a uniform deflection is obtained under all operating condition.

Inertia blocks shall be incorporated into the base plate to reduce the amplitude of vibration.

c) Installation

Fit pumps and appurtenances to the space provided and make readily serviceable.

Provide steel framework, inertia blocks, hangers, anchor bolts and vibration isolators for pumps.

Provide flanges and flexible pipe connectors to the suction and discharge connection of pumps.

Provide support to both side of the flexible connection to prevent undue strain on pumps. Such support shall be mounted so as not to transmit vibration to the building.

Each pump shall be fitted with air cocks, drain plug and a pressure gauge on both side of the pump. A drain pipe shall be extended from the gland discharge to a floor trap.

Supply and advice the location of holding bolts and fixing for incorporation in the concrete works

All pumps shall be properly labeled. All pumps shall bear the manufacturer's name plate giving the manufacturer's name, pump serial number, model number and date of manufacturer including listed recognized institution approval plate.

Any damages to finishes which have occurred during transit, storage, installation or otherwise shall be made good in the manner recommended by the manufacturer and to the satisfaction of the Superintending Officer.

All pump shall be factory painted in accordance with the manufacturer's recommendations.



SCHEDULE OF FIXED RATES



Item No.	Description	Unit	Rate
G	<p><u>GENERAL REQUIREMENT</u></p> <p>NOTES: Supply all labour, equipment, materials and tools including transportation to do the following repairworks to its good working conditions and to current good practice and make good to all works distributed to match the existing or to S.O's satisfaction as specified below or technically approved equivalent. All debris are to be taken to Contractors own dumping site / old fitting to be kept on site as per S.O instructions.</p> <p>The scope of work is the electrical maintenance and repair inclusive of troubleshooting, supply or replacement, installation, testing and commissioning of the electrical services. The scope of work shall include all necessary works and accessories required for a proper execution of work and proper functioning of all electrical services installation. All electrical works shall comply with the Brunei Electrical Installation Requirement (EIR) or latest IEE wiring regulations. All materials / fittings offered as per DES / DME / ABCI approved type only.</p> <p>Contractor MUST have qualified electricians registered with Department Of Electrical Services to do electrical installation and maintenance work.</p> <p>Approved and valid technical Pass Card MUST be attached together.</p> <p>The rate for the works are inclusive of necessary:</p> <ol style="list-style-type: none"> 1. Insurances 2. Site supervisor and management 3. Site Security 4. Programme chart (contractors should make sunsequent revisions as directed by S.O) 5. Catalogue / Samples of equipment, accessories and fittings are necessary. 6. Preparation of shop drawing and coordination 7. progress photographs 8. Disconnect, dismantle and removal from site unused / damaged existing electrical cable, trunking, conduit, switches, board, light fitting and other accessories and requirement as directed by S.O. 9. Repaint and make good wall and ceiling causes from the removal and dismantling of existing wiring and light fitting. 10. Prepare shop drawing as built drawing, testing and comissioning and liason with DES for approval upon completion of works 11. All the electrical fittings, cables, switchboard and etc must be DES Approved Vendor. 12. Warning and Signages 13. Fire prevention 14. All labour charges for workforce, equipment, supervisions, transportation and all necessary consumables to complete the works as per instructed by S.O <p><u>All prices in Bill 1.0 are flat and not included in the discount</u></p>		
1.0	<p><u>PRELIMINARIES</u> Allow for sum considered necessary to comply with the requirement of Preliminaries and Condition of Contract and including site cleaning & clearing up after completion, site safety & health and for every item of cost the contractors is required to provide for the proper execution and completion of the works.</p>	LS	\$ 500.00
1.1	<p><u>INSURANCES</u> Allow for all expenses incurred including payments of premium for providing</p> <ol style="list-style-type: none"> a) Public liability Policy in the joint names of the Government and the contractor b) Fire Policy in the joint names of the Government and the contractor c) Workmen's compensation policy in the joint names of the government and the contractor 	LS LS LS	\$ \$ \$ 300.00 300.00 300.00



Item No.	Description	Unit	Rate
1.2	<p><u>OCCUPATIONAL, SAFETY & HEALTH</u></p> <p>To provide tools and testing equipment up to standard requirements as stipulated in any international / local approved guidelines i.e General practise of Maintenance Engineering of DES for Electrical Installation Regulation (2011 - 1st Edition) and IEE regulation</p> <p>To ensure and monitor through out the contract period all works to be carried out must meet the safety and health requirement for the workers on site as required by PWD</p> <p>Note: OSH must be comply with PWD HSE policy / rules /guidlelnes and ministry of Health Guidelines</p>	LS	\$ 400.00
1.3	<p><u>HOISTING AND OTHERS LIFTING FACILITIES</u></p> <p>To provide hoisting equipment or any required machine for working at height maintenance (for requirement above 30 meter high) required by BBDP, KHEU for transporting goods to assigned place.</p>	LS	\$ 400.00



Item No.	Description	Unit	Rate
2.0	<u>SUPPLY OF NON FULL TIME ELECTRICAL WORKERS</u> All prices in Bill 2.0 are flat and not included in the discount		
2.1	<u>PREVENTIVE MAINTENANCE & SERVICE, FULL TIME STANDBY, OPERATE, ATTEND BREAKDOWN AND ON CALL</u> To provide NON - Full Time Three (3) Technicians and Three (3) Tradesman to carry out as per instruction by S.O on urgent work, daily basis or monthly preventative maintenance, standby or breakdown & services for all the systems & areas as specified on site for 24 Hours basis (including Friday, sunday, Public Holidays) Note: During office hour 8.00 am to 5.00 pm workers shall be inclusive, while after office hour or during weekend or public holiday workers are allow to be paid as per item 2.2. Work will be cover routine maintenance Such as breakdown (24hrs basis), troubleshooting & repair, standby, replace all the blown out lighting, fittings and accessories as well as per S.O requirement or Clients. The contractor shall also provide fulltime ON CALL personal include with communication etc 24 hours basis for the above works. Note: Contractors shall provide standby teams for any requirements above for special events, functions, etc during the contract period stated and any requirement by OIC All workers to be provided must have valid Department of Electrical Service pass category E01 and Electrical work certificate or Electrical work experience). Please refer to specification of work for manpower qualification and working hours. This rate include charges for installation, dismantle, realign, relocate of existing items, for any items in this bill and any related works as required / instructed by OIC Awarded contractor should provide sufficient tools and testing equipment up to standard requirement in the particular conditions for the duration of the contract period. Allow assistance for site inspection, supervision, meeting and any related activities throughout the duration of contract period. As required on the general specification requirement. To provide proper safety facilities such as hiab crane, step ladder, scaffoldings and other size lifting facilities as required on site. All facilities will not be limited on the number of usage and numbers of installation. Contractor's should have proper Safety hoisting / lifting's vehicle or related facilities which are capable to be used on every location on the site (as for this tender area). All maintenance work will be covering high and low area (unlimited usage).	Monthly	Inclusive
2.2	<u>Allow for personnel as for breakdown after office hours (5.00pm), during (Friday, Sunday and Public Holiday if required by S.O only)"</u>		
2.2.1	Electrical Technicians (Gang A - for 1 person)	hour	\$ 5.00
2.2.2	Electrical Tradesman (Gang A - for 1 person)	hour	\$ 5.00
2.2.3	Electrical Technicians (Gang B- for 1 person)	hour	\$ 5.00
2.2.4	Electrical Tradesman (Gang B- for 1 person)	hour	\$ 5.00
2.2.5	Electrical Technicians (Gang C - for 1 person)	hour	\$ 5.00
2.2.6	Electrical Tradesman (Gang C - for 1 person)	hour	\$ 5.00



Item No.	Description	Unit	Rate
3.0	<u>SWITCHES</u>		
	<u>To supply, replace, install c/w connection and termination.</u>		
	<u>As approved Equivalent to DES and Best Quality</u>		
3.1	1 gang 1 way 5A switch	No.	\$ 5.00
3.2	2 gang 1 way 5A switch	No.	\$ 10.00
3.3	3 gang 1 way 5A switch	No.	\$ 18.00
3.4	4 gang 1 way 5A switch	No.	\$ 20.00
3.5	5 gang 1 way 5A switch	No.	\$ 25.00
3.6	1 gang 2 way 5A switch	No.	\$ 8.00
3.7	2 gang 2 way 5A switch	No.	\$ 12.00
3.8	Surface 3" x 3" blank cover plate	No.	\$ 2.00
3.9	Surface 3" x 6" blank cover plate	No.	\$ 3.00
3.10	Surface 3" x 3" mounting box	No.	\$ 2.00
3.11	Surface 3" x 6" mounting box	No.	\$ 3.00
3.12	1 gang 1 way weatherproof switch	No.	\$ 100.00
3.13	2 gang 1 way weatherproof switch	No.	\$ 150.00
3.14	Ceiling fan regulator	No.	\$ 45.00
3.15	5A Ceiling Rose	No.	\$ 6.00
3.16	Fan Hook	No.	\$ 20.00
3.17	Heavy Duty Junction box c/w silicon/ gasket	No.	\$ 45.00
3.18	500W Dimmer Switch, 600W 16 Rotary Dimmer	No.	\$ 24.00
3.19	1000W Dimmer Switch, 1000W 16 Rotary Dimmer	No.	\$ 39.00
3.20	2000W Dimmer Switch	No.	\$ 50.00
3.21	<u>Switch - Gold Color Type (Cover & Switch)</u>		
3.21.1	<u>6A 1 Gang to 3 Gang Switch</u>		
3.21.1.1	1 Gang Switch Gold Plate	No.	\$ 25.00
3.21.1.2	2 Gang Switch Gold Plate	No.	\$ 29.00
3.21.1.3	3 Gang Switch Gold Plate	No.	\$ 33.00
3.21.2	<u>6A 4 Gang to 5 Gang Switch</u>		
3.21.2.1	Switch 20A Gold Plate	No.	\$ 40.00
3.21.2.2	20A Water Heater c/w pilot Lamp Switch	No.	\$ 30.00
3.21.3	<u>500W to 1500W Dimmer Switch</u>		
3.21.3.1	500W Rotary Dimmer c/w Gold Plate	No.	\$ 73.00
3.21.3.2	1500W Rotary Dimmer c/w Gold Plate	No.	\$ 94.00



Item No.	Description	Unit	Rate
4.0	<u>SWITCH SOCKET OUTLET (APPROVED TYPE ONLY)</u>		
	<u>To supply and replace faulty part c/w connection and termination</u>		
4.1	1x13A switch socket outlet	No.	\$ 5.20
4.2	1 x 13A metalclad switch socket outlet	No.	\$ 13.00
4.3	2 x 13A switch socket outlet	No.	\$ 9.75
4.4	2 x 13A metalclad switch socket outlet	No.	\$ 20.00
4.5	1 x 13A Weatherproof Switch socket Outlet	No.	\$ 36.00
4.6	2 x 13A Weatherproof Switch Socket Outlet	No.	\$ 49.00
4.7	1x15A switch socket outlet	No.	\$ 15.00
4.8	1 x 15A metalclad switch socket outlet	No.	\$ 30.00
4.9	20A double pole switch	No.	\$ 28.00
4.10	20A metalclad switch socket outlet	No.	\$ 45.00
4.11	20A water heater switch	No.	\$ 28.00
4.12	13A Fuse Connection Unit	No.	\$ 25.00
4.13	45A Cooker Control Unit	No.	\$ 100.00
4.14	20A DP Isolator	No.	\$ 17.00
4.15	32A DP Isolator	No.	\$ 22.00
4.16	20A SPN Isolator	No.	\$ 85.00
4.17	30A SPN Isolator	No.	\$ 150.00
4.18	20A TPN Isolator	No.	\$ 150.00
4.19	32A / 35A TPN Isolator	No.	\$ 200.00
4.20	55A TPN Isolator	No.	\$ 300.00
4.21	13A 3 Pin Plug Top	No.	\$ 5.00
4.22	15A 3 Pin Plug Top	No.	\$ 5.00
4.23	1G TV outlet	No.	\$ 5.00
4.24	1G Telephone Outlet	No.	\$ 7.40
4.25	1G Data Outlet Cat.6	No.	\$ 10.80
4.26	Doorbell Switch	No.	\$ 4.80



Item No.	Description	Unit	Rate
5.0	<u>GENERAL LIGHTING POINT & POWER POINT</u>		
5.1	<u>Supply, lay, terminate, testing and commissioning of lighting wiring point using 2 x 1.5mm² PVC cable + 1.5mm² PVC cable CPC in conduit / casing c/w switch</u>		
5.1.1	One lighting point controlled by one lighting switch.	No.	\$ 45.00
5.1.2	Each additional lighting point to above item.	No.	\$ 30.00
5.1.3	One lighting point controlled by 2 nos. 2-way switches.	No.	\$ 55.00
5.1.4	Each additional lighting point to above item.	No.	\$ 40.00
5.2	Wiring Fan point using 3 x 1.5mm ² PVC cable in conduit / casing c/w 5A switch, fan hook when necessary	No.	\$ 45.00
5.3	Wiring emergency lighting point using 3 x 1.5mm ² PVC cable in conduit / casing	No.	\$ 30.00
5.4	Wiring Keluar Sign point using 3 x 1.5mm ² PVC cable in conduit / casing	No.	\$ 30.00
5.5	Wiring Exhaust fan/wall fan using 3 x 1.5mm ² PVC cable in conduit / casing c/w 5A switch	No.	\$ 45.00
5.6	Wiring heavy duty wall fan & exhaust fan using 3 x 2.5mm ² PVC cable in PVC conduit / casing c/w 20A switch	No.	\$ 100.00
5.7	Wiring indoor / outdoor floodlight point using 3 x 2.5mm ² PVC cable in conduit / casing	No.	\$ 80.00
5.8	Wiring high bay point using 3 x 2.5mm ² PVC cable in conduit / casing	No.	\$ 100.00
5.9	Wiring Lighting point with photocell using 3 x 1.5mm ² PVC cable in conduit / casing	No.	\$ 140.00
5.10	Wiring Lighting point with timer using 3 x 1.5mm ² PVC cable in conduit / casing	No.	\$ 140.00
5.11	Wiring power point using 3 x 2.5mm ² PVC cable in PVC conduit / casing c/w 1 x 13A S.S.O	No.	\$ 70.00
5.12	Wiring power point using 3 x 2.5mm ² PVC cable in PVC conduit / casing c/w 2 x 13A S.S.O	No.	\$ 80.00
5.13	Wiring a/c point using 3 x 4mm ² PVC cable in PVC conduit / casing c/w 20A DP switch	No.	\$ 200.00
5.14	Wiring Cooker Point using 3 x 6mm ² PVC cable in PVC conduit / casing c/w cooker unit	No.	\$ 300.00
5.15	Wiring 20A SPN isolator point using 3 x 4mm ² PVC cable in PVC conduit / casing c/w 20A SPN isolator	No.	\$ 300.00
5.16	Wiring 32A/35A TPN isolator point using 5 x 4mm ² PVC cable in PVC conduit / casing c/w 30A/35A TPN isolator	No.	\$ 450.00
5.17	Wiring 32A SPN isolator point using 3 x 6mm ² PVC cable in PVC conduit / casing c/w 32A SPN isolator	No.	\$ 400.00
5.18	Wiring power point using 3 x 2.5mm ² PVC cable in conduit / casing c/w 1 x 13A S.S.O weatherproof	No.	\$ 200.00
5.19	Wiring power point using 3 x 2.5mm ² PVC cable in conduit / casing c/w 2 x 13A S.S.O weatherproof	No.	\$ 230.00



Item No.	Description	Unit	Rate
5.20	Wiring lighting point using 3 x 1.5mm ² PVC cable in conduit / casing c/w 5A weatherproof switch	No.	\$ 120.00
5.21	Wiring lighting point using 3 x 1.5mm ² PVC cable in conduit / casing c/w 2Gang- 5A weatherproof switch	No.	\$ 160.00
5.22	Wiring water heater point using 3 x 4mm ² PVC cable in conduit/casing c/w heater switch and 13A fuse connection unit.	No.	\$ 230.00
5.23	Wiring water pump point using 3 x 2.5mm ² PVC cable in conduit / casing c/w 20 DP switch	No.	\$ 200.00
5.24	Wiring water pump point using 3 x 2.5mm ² PVC cable in conduit / casing c/w 20A SPN weatherproof isolator	No.	\$ 250.00
5.25	Wiring 3 phase water pump using 5 x 6mm ² PVC cable in conduit / casing c/w 35A TPN weatherproof isolator	No.	\$ 600.00
5.26	Wiring telephone point c/w 2 pair cat-5 cable in PVC conduit / casing c/w telephone outlet.	No.	\$ 120.00
5.27	Wiring telephone point c/w 4 pair cat-5 cable in PVC conduit / casing c/w telephone outlet.	No.	\$ 170.00
5.28	Wiring telephone point c/w 6 pair cat-5 cable in PVC conduit / casing c/w telephone outlet.	No.	\$ 200.00
5.29	Wiring TV point c/w RG59 TV Cable in PVC conduit/casing c/w TV outlet	No.	\$ 200.00
5.30	Wiring bell	No.	\$ 45.00
5.31	Wiring emergency button using 2 x 1.5mm ² PVC cable in PVC casing / conduit c/w emergency push button, contactor and other necessary accessories	No.	\$ 300.00
5.32	Supply and installation of 2C/2.00mm ² Twin Flat waterproof Cable for decorative lightings	Mtr	\$ 4.00
5.33	<u>To supply and install PVC insulated Cable for the following sizes:</u>		
5.33.1	1C/1.5mm ²	Mtr	\$ 1.00
5.33.2	1C/2.5mm ²	Mtr	\$ 1.50
5.33.3	1C/4.0mm ²	Mtr	\$ 2.00
5.33.4	1C/6.0mm ²	Mtr	\$ 2.50



Item No.	Description	Unit	Rate
6.0	<u>TO CHECK, SERVICE AND REPLACE FAULTY PART ACCESSORIES OF LIGHT FITTING / FAN / OTHERS</u>		
6.1	<u>Clear ordinary 240V inside frosted or incandescent lamp with E27 or B22 and candle lamp.</u>		
6.1.1	15W	No.	\$ 6.00
6.1.2	25W	No.	\$ 6.00
6.1.3	40W	No.	\$ 6.00
6.1.4	60W	No.	\$ 6.00
6.1.5	75W	No.	\$ 8.00
6.1.6	100W	No.	\$ 8.00
6.2	<u>Clear ordinary 240V inside frosted or incandescent lamp with E14 base candle lamp</u>		
6.2.1	15W	No.	\$ 10.00
6.2.2	25W	No.	\$ 10.00
6.2.3	40W	No.	\$ 10.00
6.3	<u>12V halogen bulb with 2 pin cable</u>		
6.3.1	20W	No.	\$ 4.50
6.3.2	50W	No.	\$ 12.00
6.4	<u>Colour bulbs 240V 50Hz with E27 or B22 Base</u>		
6.4.1	5W	No.	\$ 3.00
6.4.2	15W	No.	\$ 4.00
6.5	<u>LED Colour bulb with E27 or B22 base</u>		
6.5.1	1W - 3W	No.	\$ 2.50
6.5.2	4W - 5W	No.	\$ 5.00
6.5.3	6W - 10W	No.	\$ 7.00
6.6	<u>LED light bulb c/w necessary accessories and modification if require</u>		
6.6.1	1W LED bulb with E27 or B22 base	No.	\$ 1.80
6.6.2	3W-4W LED bulb with E27 or B22 base	No.	\$ 3.00
6.6.3	8W LED bulb with E27 or B22 base	No.	\$ 8.00
6.6.4	8W 2 pin LED bulb	No.	\$ 8.00
6.6.5	15W 2 pin LED bulb	No.	\$ 15.00
6.6.6	9W LED bulb (any type tube / stick etc)	No.	\$ 10.00
6.6.7	10W LED bulb (any type tube / stick etc)	No.	\$ 11.00
6.6.8	12W LED bulb (any type tube / stick etc)	No.	\$ 15.00
6.6.9	15W - 20W LED bulb (any type tube / stick etc)	No.	\$ 25.00
6.6.10	23W - 25W LED bulb (any type tube / stick etc)	No.	\$ 30.00
6.7	<u>Reflector lamp 240V R50 type with E14 base</u>		
6.7.1	25W	No.	\$ 11.00
6.7.2	40W	No.	\$ 12.00
6.8	<u>R63 type with E27 or B22 base</u>		
6.8.1	40W	No.	\$ 10.00
6.8.2	60W	No.	\$ 10.00
6.8.3	75W	No.	\$ 11.00
6.8.4	100W	No.	\$ 12.50



Item No.	Description	Unit	Rate
6.9	<u>PAR 38 spot and pressed glass reflector lamp 240V 50Hz with E27 base</u>		
6.9.1	13W	No.	\$ 19.00
6.9.2	60W	No.	\$ 28.00
6.9.3	80W	No.	\$ 60.00
6.9.4	120W	No.	\$ 70.00
6.10	<u>Tungsten double end type halogen lamp 240V</u>		
6.10.1	70W	No.	\$ 32.00
6.10.2	100W	No.	\$ 35.00
6.10.3	150W	No.	\$ 45.00
6.10.4	300W	No.	\$ 55.00
6.11	<u>2 Pin PLC daylight / warm white compact lamp</u>		
6.11.1	9W	No.	\$ 15.00
6.11.2	11W	No.	\$ 15.00
6.11.3	13W	No.	\$ 16.00
6.11.4	18W	No.	\$ 20.00
6.11.5	26W	No.	\$ 30.00
6.12	<u>PLC daylight / warm white compact lamp with 4 pin base</u>		
6.12.1	13W	No.	\$ 15.00
6.12.2	18W	No.	\$ 20.00
6.12.3	26W	No.	\$ 30.00
6.12.4	42W	No.	\$ 35.00
6.13	<u>Fluorescent tube 240v 50HZ</u>		
6.13.1	18W	No.	\$ 9.00
6.13.2	36W	No.	\$ 9.00
6.13.3	65W	No.	\$ 10.00
6.14	<u>LED fluorescent tube 240V 50HZ</u>		
6.14.1	8W-9W	No.	\$ 23.00
6.14.2	13 -18W	No.	\$ 25.00
6.15	18-65W fluorescent S10 starter	No.	\$ 3.50
6.16	18-65W fluorescent ballast 240V 50HZ	No.	\$ 15.00
6.17	T5 14 - 28W fluorescent tube	No.	\$ 20.00
6.18	T5 14 - 28W fluorescent ballast	No.	\$ 35.00
6.19	Electronic Transformer for halogen lamp input : 240V 50HZ/60HZ Output : 12V 20-50W	No.	\$ 50.00
6.20	<u>PLC 240V 50HZ ballast</u>		
6.20.1	11W	No.	\$ 10.00
6.20.2	13W	No.	\$ 12.00
6.20.3	18W	No.	\$ 15.00
6.20.4	26W	No.	\$ 20.00
6.21	Fluorescent lamp holder for compact, lamp 240V , 50 HZ	No.	\$ 10.00




Item No.	Description	Unit	Rate
6.22	Fluorescent starter holder for compact, lamp 240V , 50 HZ	No.	\$ 10.00
6.23	E27 lamp holder base	No.	\$ 10.00
6.24	E40 lamp holder base	No.	\$ 20.00
6.25	B22 lamp holder base	No.	\$ 10.00
6.26	2 pin PLC holder	No.	\$ 10.00
6.27	4 pin PLC holder	No.	\$ 12.00
6.28	2 Pin 50W halogen holder	No.	\$ 10.00
6.29	<u>E27/B22 energy effective prismatic SL lamp 240V 50HZ</u>		
6.29.1	9W	No.	\$ 30.00
6.29.2	13W	No.	\$ 40.00
6.29.3	18W	No.	\$ 45.00
6.29.4	26W	No.	\$ 50.00
6.30	<u>E27/B22 energy saver bulb cool daylight / warm white lamp 240V 50HZ</u>		
6.30.1	9W	No.	\$ 20.00
6.30.2	11W	No.	\$ 20.00
6.30.3	13W	No.	\$ 20.00
6.30.4	18W	No.	\$ 30.00
6.30.5	23W	No.	\$ 35.00
6.30.6	35W	No.	\$ 50.00
6.30.7	55W	No.	\$ 60.00
6.31	16W 2D lamp with 2 pin cap and built in starter switch	No.	\$ 30.00
6.32	28W 2D with 4 pin cap	No.	\$ 35.00
6.33	Ballast for 16W 2D lamp	No.	\$ 18.00
6.34	Ballast for 28W 2D lamp	No.	\$ 23.00
6.35	Capacitor for 16W/28W 2D lamp	No.	\$ 18.00
6.36	Starter for 16/28W 2D lamp	No.	\$ 8.00
6.37	Lamp Holder for 16/28W 2D lamp	No.	\$ 15.00
6.38	<u>Circular fluorescent tube</u>		
6.38.1	22W	No.	\$ 18.00
6.38.2	32W	No.	\$ 25.00
6.38.3	40W	No.	\$ 25.00
6.39	Circular fluorescent tube holder	No.	\$ 12.00



Item No.	Description	Unit	Rate
6.40	<u>High pressure SON/T lamp 240V, 50HZ</u>		
6.40.1	70W	No.	\$ 48.00
6.40.2	150W	No.	\$ 55.00
6.40.3	250W	No.	\$ 70.00
6.40.4	400W	No.	\$ 85.00
6.41	<u>Metal halide lamp 240V, 50HZ</u>		
6.41.1	70W	No.	\$ 45.00
6.41.2	150W	No.	\$ 60.00
6.41.3	250W	No.	\$ 70.00
6.41.4	400W	No.	\$ 80.00
6.41.5	1000W	No.	\$ 250.00
6.41.6	2000W	No.	\$ 350.00
6.42	<u>High mecury lamp 240V, 50HZ</u>		
6.42.1	150W	No.	\$ 60.00
6.42.2	250W	No.	\$ 80.00
6.42.3	100W	No.	\$ 100.00
6.43	<u>Ignitor for high pressure lamp and metal halide lamp</u>		
6.43.1	70W - 400W	No.	\$ 28.00
6.43.2	1000W	No.	\$ 85.00
6.43.3	2000W	No.	\$ 150.00
6.44	<u>Ballast for high pressure lamp</u>		
6.44.1	70W	No.	\$ 50.00
6.44.2	150W	No.	\$ 60.00
6.44.3	250W	No.	\$ 90.00
6.44.4	400W	No.	\$ 100.00
6.45	<u>Ballast for metal halide lamp</u>		
6.45.1	70W	No.	\$ 50.00
6.45.2	150W	No.	\$ 60.00
6.45.3	250W	No.	\$ 90.00
6.45.4	400W	No.	\$ 100.00
6.45.5	1000W	No.	\$ 250.00
6.45.6	2000W	No.	\$ 350.00
6.46	15UF Capacitor for 70W floodlight	No.	\$ 38.00
6.47	20UF Capacitor for 150W floodlight	No.	\$ 45.00
6.48	25UF Capacitor for 250W floodlight	No.	\$ 48.00
6.49	32UF Capacitor for 400W floodlight	No.	\$ 50.00
6.50	50 - 100UF Capacitor for 1000W floodlight	No.	\$ 100.00
6.51	50-100UF Capacitor for 2000W floodlight	No.	\$ 200.00
6.52	1 tube electronic ballast	No.	\$ 35.00
6.53	2 tube electronic ballast	No.	\$ 50.00



Item No.	Description	Unit	Rate
6.54	3 tube electronic ballast	No.	\$ 70.00
6.55	4 tube electronic ballast	No.	\$ 100.00
6.56	1.8UF - 3UF fan capacitor	No.	\$ 10.00
6.57	<u>Decorative & Other Type of Bulb</u>		
6.57.1	LED twin Rope Light x 100 metres	Roll	\$ 260.00
6.57.2	LED twin Rope light per meter	Mtr	\$ 3.00
			

Item No.	Description	Unit	Rate
7.0	<u>To supply and install PVC/SWA/PVC , XLPE/SWA/PVC Cable for the following sizes</u>		
7.1	2C/1.5mm2	Mtr	\$ 10.00
7.2	2C/2.5mm2	Mtr	\$ 15.00
7.3	2C/4mm2	Mtr	\$ 18.00
7.4	2C/6mm2	Mtr	\$ 20.00
7.5	2C/10mm2	Mtr	\$ 22.00
7.6	2C/16mm2	Mtr	\$ 25.00
7.7	2C/25mm2	Mtr	\$ 30.00
7.8	2C/35mm2	Mtr	\$ 33.00
7.9	4C/2.5mm2	Mtr	\$ 16.00
7.10	4C/4mm2	Mtr	\$ 19.00
7.11	4C/6mm2	Mtr	\$ 21.00
7.12	4C/10mm2	Mtr	\$ 27.00
7.13	4C/16mm2	Mtr	\$ 36.00
7.14	4C/25mm2	Mtr	\$ 48.00
7.15	4C/35mm2	Mtr	\$ 60.00
7.16	4C/50mm2	Mtr	\$ 80.00
7.17	4C/70mm2	Mtr	\$ 90.00
7.18	4C/95mm2	Mtr	\$ 120.00
7.19	4C/120mm2	Mtr	\$ 145.00
7.20	4C/150mm2	Mtr	\$ 170.00
7.21	4C/185mm2	Mtr	\$ 220.00
7.22	4C/240mm2	Mtr	\$ 295.00
7.23	1C/300mm2	Mtr	\$ 115.00
7.24	1C/400mm2	Mtr	\$ 160.00
7.25	1C/500mm2	Mtr	\$ 200.00
7.26	<u>To supply and install XLPE/AWA/PVC cable for the following sizes:</u>		
7.26.1	1C/300mm2	Mtr	\$ 30.00
7.26.2	1C/400mm2	Mtr	\$ 180.00
7.26.3	1C/500mm2	Mtr	\$ 220.00
7.27	<u>To supply and install LT straight through joint PVC or XLPE armoured cable for the following sizes:-</u>		
7.27.1	Up to 25mm2/2C	No.	\$ 150.00
7.27.2	Up to 25mm2/4C	No.	\$ 180.00
7.27.3	35 to 70mm2/4C	No.	\$ 250.00
7.27.4	95 to 150mm2/4C	No.	\$ 800.00
7.27.5	185 to 300mm2 /4C	No.	\$ 1,000.00
7.27.6	300 to 500mm2 /1C	No.	\$ 1,300.00
7.28	To hack and break existing pavement c/w encased mass concrete surround	Mtr	\$ 120.00
7.29	To cut and digging existing pavement	Mtr	\$ 100.00
7.30	<u>To Provide UPVC pipe sleeves</u>		
7.30.1	50mm2 dia	Mtr	\$ 40.00
7.30.2	100mm2 dia.Ditto	Mtr	\$ 78.00
7.30.3	150mm2 dia. Ditto	Mtr	\$ 90.00
7.31	Excavation of cable trench approx. 750mm wide x 750mm deep of soft ground c/w backfilling and making good	Mtr	\$ 15.00



Item No.	Description	Unit	Rate
7.32	<u>Supply and installation of PVC cable in metal trunking . (Metal Trunking separate)</u>		
7.32.1	2 x 1C/10mm2 + 10mm2 ECC cable	Mtr	\$ 10.00
7.32.2	2 x 1C/16mm2 + 10mm2 ECC cable	Mtr	\$ 16.00
7.32.3	2 x 1C/25mm2 + 16mm2 ECC cable	Mtr	\$ 24.00
7.32.4	2 x 1C/35mm2 + 25mm2 ECC cable	Mtr	\$ 30.00
7.32.5	2 x 1C/50mm2 + 35mm2 ECC cable	Mtr	\$ 40.00
7.32.6	4 x 1C/10mm2 + 10mm2 ECC cable	Mtr	\$ 30.00
7.32.7	4 x 1C/16mm2 + 10mm2 ECC cable	Mtr	\$ 40.00
7.32.8	4 x 1C/25mm2 + 16mm2 ECC cable	Mtr	\$ 52.00
7.32.9	4 x 1C/35mm2 + 25mm2 ECC cable	Mtr	\$ 64.00
7.32.10	4 x 1C/50mm2 + 35mm2 ECC cable	Mtr	\$ 85.00
7.32.11	4 x 1C/70mm2 + 50mm2 ECC cable	Mtr	\$ 95.00
7.32.12	4 x 1C/95mm2 + 70mm2 ECC cable	Mtr	\$ 130.00
7.32.13	4 x 1C/35mm2 + 95mm2 ECC cable	Mtr	\$ 150.00
7.33	<u>Supply and installation of PVC insulated (GREEN) Earth Wire</u>		
7.33.1	1 x 16mm2	Mtr	\$ 10.00
7.33.2	1 x 25mm2	Mtr	\$ 15.00
7.33.3	1 x 35mm2	Mtr	\$ 20.00
7.33.4	1 x 50mm2	Mtr	\$ 25.00
7.33.5	1 x 70mm2	Mtr	\$ 35.00
7.33.6	1 x 95mm2	Mtr	\$ 45.00
7.33.7	1 x 120mm2	Mtr	\$ 60.00
7.34	<u>Supply and installation of metal trunking / PVC trunking c/w bracket support</u>		
7.34.1	50mm x 25mm	Mtr	\$ 25.00
7.34.2	50mm x 50mm	Mtr	\$ 26.00
7.34.3	75mm x 50mm	Mtr	\$ 30.00
7.34.4	100mm x 50mm	Mtr	\$ 35.00
7.34.5	100mm x 75mm	Mtr	\$ 40.00
7.34.6	100mm x 100mm	Mtr	\$ 48.00
7.34.7	75mm x 150mm	Mtr	\$ 60.00
7.35	<u>Supply and installation of cable tray c/w tray earth link and other accessories c/w bracket support</u>		
7.35.1	50 mm	Mtr	\$ 10.00
7.35.2	75 mm	Mtr	\$ 18.00
7.35.3	100 mm	Mtr	\$ 25.00
7.35.4	150 mm	Mtr	\$ 33.00
7.35.5	200 mm	Mtr	\$ 40.00
7.35.6	250 mm	Mtr	\$ 52.00
7.36	Disconnect and dismantle and remove existing, underground cable trunking, cable tray	Mtr	\$ 15.00
7.37	To check, rectify, mega faulty of cable	Lot	\$ 450.00
7.38	Supply and install UPVC cover plate flat with embossed raised lettering c/w interlocking device 'DANGER LV CABLE'	No.	\$ 2.80



Item No.	Description	Unit	Rate
8.0	<u>Lightning Protection System</u>		
8.1	Supply and install main 'Earth' electrode copper clad steel core rod c/w brass copper clamp, identification tag with the word 'ELECTRICAL EARTH - DO NOT REMOVE' and hot dip galvanised inspection pit fitted with hinged cover.		
8.1.1	16mm OD x 1800mm(L)	Lot	\$ 400.00
8.1.2	25mm OD x 1800mm(L)	Lot	\$ 450.00
8.2	<u>Supply and install of Air Terminal - annealed copper rod of tapered tip</u>		
8.2.1	Length: 300mm	No.	\$ 165.00
8.2.2	Length: 500mm	No.	\$ 185.00
8.3	Supply and install Air Terminal Base	No.	\$ 45.00
8.4	Supply and install Tape Saddle	No.	\$ 5.00
8.5	Supply and Install Circular Conductor Saddle	No.	\$ 6.00
8.6	Supply and install Circular Conductor Saddle	No.	\$ 6.00
8.7	Supply and install Tape Clip	No.	\$ 5.00
8.8	Supply and install Square Tape Joint	No.	\$ 6.00
8.9	To supply and install 25mm(W) x 3mm(T) Copper Tape surface-run on wall or roof c/w gunmetal DC clips at intervals not exceeding 500mm and all mounting accessories.	m.	\$ 32.00
8.10	To supply and install 25mm(W) x 3mm(T) Copper Tape laid in conduit surface-run on wall.	m.	\$ 35.00
8.11	To supply and install 25mm(W) x 3mm(T) Copper Tape laid in conduit concealed in wall or column.	m.	\$ 36.00
8.12	To supply and install 25mm(W) x 3mm(T) Copper Tape laid underground interconnecting earth pits.	m.	\$ 32.00
8.13	To supply and install Round Test Clamp	No.	\$ 38.00
8.14	Earth test joint clamp in wall recessed c/w oblong clamp, cover plate, label and high UV resistance junction box.	No.	\$ 59.00



Item No.	Description	Unit	Rate
8.15	<u>To supply and install Round Test Clamp Earth Inspection Chamber c/w Cover with Label.</u>		
8.15.1	Hot-Dipped Galvanized Type	No.	\$ 98.00
8.15.2	Concrete Type	No.	\$ 128.00
8.15.3	Polymer Type	No.	\$ 75.00
8.16	<u>To supply and install Earthing Clamps</u>		
8.16.1	Rod to Tape Clamp	No.	\$ 35.00
8.16.2	A-Clamp	No.	\$ 35.00
8.19	To supply and install Ground Rod to Cable Clamp	No.	\$ 35.00
8.20	To supply and install U-Clamp Connector	No.	\$ 35.00
8.21	<u>To supply and install Earth Rods</u>		
8.21.1	16mm OD x 1800mm(L)	No.	\$ 58.00
8.21.2	25mm OD x 1800mm(L)	No.	\$ 75.00
8.22	<u>To supply and install Coupling</u>		
8.22.1	16mm OD	No.	\$ 25.00
8.22.1	25mm OD	No.	\$ 35.00
8.23	To join copper conductors via Cadweld	No.	\$ 162.00



Item No.	Description	Unit	Rate
9.0	<u>Components, Parts and Accessories for Main Switchboard, Sub-Switchboard and Distribution Board</u>		
9.1	<u>Air Circuit Breaker (ACB)</u>		
	<u>Supply, install, testing and commissioning of ACB.</u>		
9.1.1	800 Amp TPN	No.	\$ 8,400.00
9.1.2	1000 Amp TPN	No.	\$ 8,950.00
9.1.3	1200 Amp TPN	No.	\$ 9,850.00
9.1.4	1600 Amp TPN	No.	\$ 11,500.00
9.1.5	25000 Amp TPN	No.	\$ 23,800.00
9.1.6	800 Amp 4P	No.	\$ 8,800.00
9.1.7	1000 Amp 4P	No.	\$ 9,350.00
9.1.8	1200 Amp 4P	No.	\$ 10,350.00
9.1.9	1600 Amp 4P	No.	\$ 12,500.00
9.1.10	25000 Amp T4P	No.	\$ 24,900.00
9.2	<u>Moulded Case Circuit Breaker (MCCB)</u>		
	<u>Supply, install, testing and commissioning of MCCB Type B / Type C</u>		
9.2.1	40 Amp SP	No.	\$ 150.00
9.2.2	63 Amp SP	No.	\$ 160.00
9.2.3	80 Amp SP	No.	\$ 180.00
9.2.4	100 Amp SP	No.	\$ 200.00
9.2.5	40 Amp SPN	No.	\$ 160.00
9.2.6	63 Amp SPN	No.	\$ 170.00
9.2.7	80 Amp SPN	No.	\$ 190.00
9.2.8	100 Amp SPN	No.	\$ 210.00
9.2.9	40 Amp DP	No.	\$ 180.00
9.2.10	63 Amp DP	No.	\$ 190.00
9.2.11	80 Amp DP	No.	\$ 200.00
9.2.12	100 Amp DP	No.	\$ 220.00
9.2.13	40 Amp TP	No.	\$ 200.00
9.2.14	63 Amp TP	No.	\$ 230.00
9.2.15	80 Amp TP	No.	\$ 260.00
9.2.16	100 Amp TP	No.	\$ 300.00
9.2.17	125 Amp TP	No.	\$ 330.00
9.2.18	150 Amp TP	No.	\$ 380.00
9.2.19	250 Amp TP	No.	\$ 420.00
9.2.20	350 Amp TP	No.	\$ 680.00
9.2.21	400 Amp TP	No.	\$ 880.00
9.2.22	600 Amp TP	No.	\$ 1,000.00
9.2.23	800 Amp TP	No.	\$ 1,200.00



Item No.	Description	Unit	Rate
9.2.24	40 Amp TPN	No.	\$ 220.00
9.2.25	63 Amp TPN	No.	\$ 250.00
9.2.26	80 Amp TPN	No.	\$ 280.00
9.2.27	100 Amp TPN	No.	\$ 320.00
9.2.28	125 Amp TPN	No.	\$ 350.00
9.2.29	150 Amp TPN	No.	\$ 400.00
9.2.30	250 Amp TPN	No.	\$ 450.00
9.2.31	350 Amp TPN	No.	\$ 720.00
9.2.32	400 Amp TPN	No.	\$ 920.00
9.2.33	600 Amp TPN	No.	\$ 1,100.00
9.2.34	800 Amp TPN	No.	\$ 1,300.00
9.2.35	40 Amp 4P	No.	\$ 250.00
9.2.36	63 Amp 4P	No.	\$ 280.00
9.2.37	80 Amp 4P	No.	\$ 320.00
9.2.38	100 Amp 4P	No.	\$ 350.00
9.2.39	125 Amp 4P	No.	\$ 370.00
9.2.40	150 Amp 4P	No.	\$ 430.00
9.2.41	250 Amp 4P	No.	\$ 495.00
9.2.42	350 Amp 4P	No.	\$ 780.00
9.2.43	400 Amp 4P	No.	\$ 980.00
9.2.44	600 Amp 4P	No.	\$ 1,200.00
9.2.45	800 Amp 4P	No.	\$ 1,400.00
9.3	<u>Residual Current Devices (RCD)</u>		
	<u>Supply, install, testing and commissioning of RCD</u>		
9.3.1	32 Amp DP 100mA	No.	\$ 72.00
9.3.2	40 Amp DP 100mA	No.	\$ 72.00
9.3.3	63 Amp DP 100mA	No.	\$ 96.00
9.3.4	80 Amp DP 100mA	No.	\$ 120.00
9.3.5	100 Amp DP 100mA	No.	\$ 156.00
9.3.6	32 Amp DP 30mA	No.	\$ 72.00
9.3.7	40 Amp DP 30mA	No.	\$ 72.00
9.3.8	63 Amp DP 30mA	No.	\$ 96.00
9.3.9	80 Amp DP 30mA	No.	\$ 120.00
9.3.10	100 Amp DP 30mA	No.	\$ 156.00
9.3.11	32 Amp 4P 100mA	No.	\$ 96.00
9.3.12	40 Amp 4P 100mA	No.	\$ 96.00
9.3.13	63 Amp 4P 100mA	No.	\$ 120.00
9.3.14	80 Amp 4P 100mA	No.	\$ 144.00
9.3.15	100 Amp 4P 100mA	No.	\$ 180.00
9.3.16	32 Amp 4P 30mA	No.	\$ 96.00
9.3.17	40 Amp 4P 30mA	No.	\$ 96.00
9.3.18	63 Amp 4P 30mA	No.	\$ 120.00
9.3.19	80 Amp 4P 30mA	No.	\$ 144.00
9.3.20	100 Amp 4P 30mA	No.	\$ 180.00



Item No.	Description	Unit	Rate
9.4	<u>Automatic Transfer Switches (ATS)</u>		
	<u>Supply, install, testing and commissioning of the following automatic transfer switch c/w manual bypass.</u>		
9.4.1	63 Amp 4P	No.	\$ 3,024.00
9.4.2	100 Amp 4P	No.	\$ 3,024.00
9.4.3	125 Amp 4P	No.	\$ 3,024.00
9.4.4	150 Amp 4P	No.	\$ 3,300.00
9.4.5	250 Amp 4P	No.	\$ 4,116.00
9.4.6	350 Amp 4P	No.	\$ 6,924.00
9.4.7	400 Amp 4P	No.	\$ 6,924.00
9.4.8	600 Amp 4P	No.	\$ 8,160.00
9.4.9	800 Amp 4P	No.	\$ 9,264.00
9.4.10	1000 Amp 4P	No.	\$ 10,236.00
9.4.11	1200 Amp 4P	No.	\$ 10,236.00
9.4.12	1600 Amp 4P	No.	\$ 11,226.00
9.5	<u>Earth Leakage Relays (ELR)</u>		
	<u>Supply, install, testing and commissioning of the following adjustable electronic earth leakage relay c/w zero sequence current transformer (ZCT) and all necessary wiring.</u>		
9.5.1	For 100 Amp TPN / 4P circuit breaker	No.	\$ 420.00
9.5.2	For 125 Amp TPN / 4P circuit breaker	No.	\$ 420.00
9.5.3	For 150 Amp TPN / 4P circuit breaker	No.	\$ 420.00
9.5.4	For 250 Amp TPN / 4P circuit breaker	No.	\$ 576.00
9.5.5	For 350 Amp TPN / 4P circuit breaker	No.	\$ 816.00
9.6	<u>Supply, install, testing and commissioning of the following zero sequence current transformer (ZCT) for ELR including all necessary wiring.</u>		
9.6.1	ZCT Inner Diameter: 40mm	No.	\$ 660.00
9.6.2	ZCT Inner Diameter: 60mm	No.	\$ 780.00
9.6.3	ZCT Inner Diameter: 80mm	No.	\$ 900.00
9.6.4	ZCT Inner Diameter: 120mm	No.	\$ 1,140.00
9.6.5	ZCT Inner Diameter: 160mm	No.	\$ 1,380.00
9.6.6	ZCT Inner Diameter: 210mm	No.	\$ 1,620.00
9.6.7	ZCT Inner Diameter: 300mm	No.	\$ 2,388.00
9.7	<u>Earth Fault Relays (EFR)</u>		
	<u>Supply, install, testing and commissioning of the following earth fault relay c/w current transformers and all necessary wiring.</u>		
9.7.1	For 400 Amp TPN / 4P circuit breaker	No.	\$ 660.00
9.7.2	For 600 Amp TPN / 4P circuit breaker	No.	\$ 780.00
9.7.3	For 800 Amp TPN / 4P circuit breaker	No.	\$ 900.00
9.7.4	For 1000 Amp TPN / 4P circuit breaker	No.	\$ 1,140.00
9.7.5	For 1200 Amp TPN / 4P circuit breaker	No.	\$ 1,380.00
9.7.6	For 1600 Amp TPN / 4P circuit breaker	No.	\$ 1,620.00
9.7.7	For 2500 Amp TPN / 4P circuit breaker	No.	\$ 2,388.00



Item No.	Description	Unit	Rate
9.8	<u>Overcurrent Relays (OCR)</u>		
	<u>Supply, install, testing and commissioning of the following overcurrent relay c/w current transformers and all necessary wiring.</u>		
9.8.1	For 400 Amp TPN / 4P circuit breaker	No.	\$ 900.00
9.8.2	For 600 Amp TPN / 4P circuit breaker	No.	\$ 1,020.00
9.8.3	For 800 Amp TPN / 4P circuit breaker	No.	\$ 1,140.00
9.8.4	For 1000 Amp TPN / 4P circuit breaker	No.	\$ 1,380.00
9.8.5	For 1200 Amp TPN / 4P circuit breaker	No.	\$ 1,620.00
9.8.6	For 1600 Amp TPN / 4P circuit breaker	No.	\$ 1,860.00
9.8.7	For 2500 Amp TPN / 4P circuit breaker	No.	\$ 2,628.00
9.9	<u>Digital Power Meters (DPM)</u>		
	<u>Supply, install, testing and commissioning of the following digital power meter c/w current transformers, fuses / MCBs and all necessary wiring.</u>		
9.9.1	For 100 Amp TPN / 4P circuit breaker	No.	\$ 1,140.00
9.9.2	For 125 Amp TPN / 4P circuit breaker	No.	\$ 1,140.00
9.9.3	For 150 Amp TPN / 4P circuit breaker	No.	\$ 1,140.00
9.9.4	For 250 Amp TPN / 4P circuit breaker	No.	\$ 1,140.00
9.9.5	For 350 Amp TPN / 4P circuit breaker	No.	\$ 1,140.00
9.9.6	For 400 Amp TPN / 4P circuit breaker	No.	\$ 1,140.00
9.9.7	For 600 Amp TPN / 4P circuit breaker	No.	\$ 1,260.00
9.9.8	For 800 Amp TPN / 4P circuit breaker	No.	\$ 1,380.00
9.9.9	For 1000 Amp TPN / 4P circuit breaker	No.	\$ 1,620.00
9.9.10	For 1200 Amp TPN / 4P circuit breaker	No.	\$ 1,860.00
9.9.11	For 1600 Amp TPN / 4P circuit breaker	No.	\$ 2,100.00
9.9.12	For 2500 Amp TPN / 4P circuit breaker	No.	\$ 2,868.00
9.10	Supply, install, testing and commissioning of 0Vac - 500Vac Analogue Panel Voltmeter.	No.	\$ 96.00
9.11	<u>Supply, install, testing and commissioning of Analogue Panel Ammeter</u>		
9.11.1	Ammeter Reading: 0 Amp - 100 Amp	No.	\$ 96.00
9.11.2	Ammeter Reading: 0 Amp - 125 Amp	No.	\$ 96.00
9.11.3	Ammeter Reading: 0 Amp - 150 Amp	No.	\$ 96.00
9.11.4	Ammeter Reading: 0 Amp - 250 Amp	No.	\$ 96.00
9.11.5	Ammeter Reading: 0 Amp - 400 Amp	No.	\$ 96.00
9.11.6	Ammeter Reading: 0 Amp - 600 Amp	No.	\$ 96.00
9.11.7	Ammeter Reading: 0 Amp - 800 Amp	No.	\$ 96.00
9.11.8	Ammeter Reading: 0 Amp - 1000 Amp	No.	\$ 96.00
9.11.9	Ammeter Reading: 0 Amp - 120 Amp	No.	\$ 96.00
9.11.10	Ammeter Reading: 0 Amp - 1600 Amp	No.	\$ 96.00
9.11.11	Ammeter Reading: 0 Amp - 2500 Amp	No.	\$ 96.00



Item No.	Description	Unit	Rate
9.12	<u>Supply, install, testing and commissioning of the following current transformer for earth fault relay, overcurrent relay, digital power meter and ammeter including all necessary wiring.</u>		
9.12.1	CT Ratio: 100 / 5A	No.	\$ 72.00
9.12.2	CT Ratio: 125 / 5A	No.	\$ 84.00
9.12.3	CT Ratio: 150 / 5A	No.	\$ 84.00
9.12.4	CT Ratio: 250 / 5A	No.	\$ 108.00
9.12.5	CT Ratio: 350 / 5A	No.	\$ 132.00
9.12.6	CT Ratio: 400 / 5A	No.	\$ 132.00
9.12.7	CT Ratio: 600 / 5A	No.	\$ 156.00
9.12.8	CT Ratio: 800 / 5A	No.	\$ 192.00
9.12.9	CT Ratio: 1000 / 5A	No.	\$ 216.00
9.12.10	CT Ratio: 1200 / 5A	No.	\$ 252.00
9.12.11	CT Ratio: 1600 / 5A	No.	\$ 288.00
9.12.12	CT Ratio: 2500 / 5A	No.	\$ 372.00
9.13	<u>Supply, install, testing and commissioning of HRC fuse / Cut-out fuse as per DES specification.</u> <u>High Rupturing Capacity (HRC) Fuse</u>		
9.13.1	up to 10 Amp	No.	\$ 24.00
9.13.2	up to 20 Amp	No.	\$ 24.00
9.13.3	up to 40 Amp	No.	\$ 46.00
9.13.4	up to 60 Amp	No.	\$ 70.00
	<u>Cut-Out Fuse</u>		
9.13.5	Single Phase, non-hygroscopic ABS moulding case c/w integral 10A mcb, 2-way cable entry cable terminating terminals.	No.	\$ 42.00
9.13.6	Three Phase, non-hygroscopic ABS moulding case c/w integral 10Amcb, 2-way cable entry cable terminating terminals.	No.	\$ 240.00
9.14	Contactors <u>Supply, install, testing and commissioning of single phase contactor.</u>		
9.14.1	up to 10 Amp 1 Pole	No.	\$ 48.00
9.14.2	up to 20 Amp 1 Pole	No.	\$ 48.00
9.14.3	up to 25 Amp 1 Pole	No.	\$ 72.00
9.14.4	up to 25 Amp 2 Pole	No.	\$ 72.00
9.14.5	up to 40 Amp 1 Pole	No.	\$ 84.00
	<u>Supply, install, testing and commissioning of three phase contactor.</u>		
9.14.6	up to 25 Amp 3 Pole	No.	\$ 48.00
9.14.7	up to 25 Amp 4 Pole	No.	\$ 48.00
9.14.8	up to 40 Amp 2 Pole	No.	\$ 84.00
9.14.9	up to 40 Amp 3 Pole	No.	\$ 84.00
9.14.10	up to 40 Amp 4 Pole	No.	\$ 84.00
9.14.11	up to 63 Amp 2 Pole	No.	\$ 108.00
9.14.12	up to 63 Amp 3 Pole	No.	\$ 108.00
9.14.13	up to 63 Amp 4 Pole	No.	\$ 108.00
9.15	Supply, install, testing and commissioning of by-pass switch.	No.	\$ 72.00
9.16	Supply, install, testing and commissioning of selector switch.	No.	\$ 120.00



Item No.	Description	Unit	Rate
9.17	Photocell <u>Supply, install, testing and commissioning of photocell</u>		
9.17.1	6 Amp Photocell.	No.	\$ 144.00
9.17.2	10 Amp Photocell.	No.	\$ 144.00
9.18	Timer <u>Supply, install, testing and commissioning of 7 days 24 hours timer with spring reserve.</u>		
9.18.1	up to 16 Amp	No.	\$ 156.00
9.18.2	up to 32 Amp	No.	\$ 156.00
9.19	Supply, install, testing and commissioning of LED indicator lamp	No.	\$ 24.00
9.20	Supply, install, testing and commissioning of LED indicator lamp holder.	No.	\$ 24.00
9.21	Supply and install of indicator LED indicator lamp cover.	No.	\$ 24.00
9.22	<u>Supply, install, testing and commissioning of Neutral terminal:-</u>		
9.22.1	Neutral terminal for switch fuse 30 Amp	No.	\$ 24.00
9.22.2	Neutral terminal for switch fuse 60 Amp	No.	\$ 24.00
9.22.3	Neutral terminal for switch fuse 100 Amp	No.	\$ 36.00
9.23	<u>Supply, install, testing and commissioning of metalclad cutouts:-</u>		
9.23.1	30 Amp / 32Amp SPN	No.	\$ 96.00
9.23.2	60 Amp / 63 Amp SPN	No.	\$ 144.00
9.23.3	100 Amp SPN	No.	\$ 144.00
9.23.4	30 Amp / 32Amp TPN	No.	\$ 168.00
9.23.5	60 Amp / 63 Amp TPN	No.	\$ 168.00
9.23.6	100 Amp TPN	No.	\$ 168.00
9.24	<u>Supply, install, testing and commissioning of fuse holder only, ceramic porcelain or thermoplastic, rewirable or cartridge type:-</u>		
9.24.1	30 Amp / 32 Amp, 500V	No.	\$ 48.00
9.24.2	60 Amp / 63 Amp, 500V	No.	\$ 72.00
9.24.3	100 Amp, 500V	No.	\$ 132.00
9.24.4	200 Amp, 500V	No.	\$ 336.00
9.25	<u>Supply, install, testing and commissioning of fuse base only, ceramic porcelain or thermoplastic:-</u>		
9.25.1	30 Amp / 32 Amp, 500V	No.	\$ 48.00
9.25.2	60 Amp / 63 Amp, 500V	No.	\$ 72.00
9.25.3	100 Amp, 500V	No.	\$ 132.00
9.25.4	200 Amp, 500V	No.	\$ 336.00
9.26	<u>Supply, install, testing and commissioning of Neutral links:-</u>		
9.26.1	20 Amp – 30 Amp	No.	\$ 48.00
9.26.2	60 Amp	No.	\$ 72.00



Item No.	Description	Unit	Rate
9.27	<u>Supply, install, testing and commissioning of HRC cartridge fuses to IEC 60269-1, with off-set tags or central tags of rating:-</u>		
9.27.1	6 Amp / 10 Amp / 20 Amp	No.	\$ 24.00
9.27.2	25 Amp / 32 Amp	No.	\$ 24.00
9.27.3	40 Amp / 50 Amp / 63 Amp	No.	\$ 45.60
9.27.4	80 Amp / 100 Amp	No.	\$ 57.60
9.27.5	125 Amp / 160 Amp / 200 Amp	No.	\$ 81.60
9.27.6	250 Amp / 315 Amp	No.	\$ 103.20
9.27.7	350 Amp / 400 Amp	No.	\$ 103.20
9.27.8	450 Amp / 500 Amp	No.	\$ 114.00
9.27.9	630 Amp	No.	\$ 132.00
9.27.10	800 Amp	No.	\$ 216.00
9.28	Supply, install, testing and commissioning of cartridge fuse links to IEC 60269-1 suitable for 13 Amp plug-tops, 2 Amp (yellow), 3 Amp (blue), 5 Amp (red), 10 Amp (black) and 13 Amp (brown).	No.	\$ 24.00
9.29	100 Amp SP fork type insulated copper busbar	No.	\$ 144.00
9.30	60 Amp Single Phase cut-outs c/w fuse links (BS88) and 1 No. Neutral link.	No.	\$ 79.20
9.31	60 Amp 3 Phase cut-outs c/w fuse links (BS88) and 1 No. Neutral link.	No.	\$ 144.00
9.32	<u>Supply and install porcelain supports for busbar c/w bolts, nuts and washers.</u>		
9.32.1	10 BM 73mm x 35mm x 60mm	No.	\$ 48.00
9.32.2	10 BMD 73mm x 35mm x 79mm	No.	\$ 54.00
9.32.3	10 BML 95mm x 51mm x 79mm	No.	\$ 78.00
9.33	<u>Supply, install, testing and commissioning of Ironclad weatherproof fireman's switch locked switch and switch fuse – 250V AC/DC.</u>		
9.33.1	15 Amp 215 AF DP	No.	\$ 145.00
9.33.2	30 Amp 230 AF DP	No.	\$ 198.00
9.33.3	Fireman's switch name-plate 2 FNP	No.	\$ 40.00
9.33.4	15 Amp 215 AS DP locked switch	No.	\$ 140.00
9.33.5	15 Amp 215 KSN SPN switch fuse	No.	\$ 183.00
9.33.6	15 Amp 215 KS DP switch	No.	\$ 168.00



Item No.	Description	Unit	Rate
9.34	<u>Supply and install of cable lug c/w insulating sleeve for cable with the following size:-</u>		
9.34.1	1 core 1.5mm ²	No.	\$ 5.00
9.34.2	1 core 2.5mm ²	No.	\$ 7.00
9.34.3	1 core 4mm ²	No.	\$ 9.00
9.34.4	1 core 6mm ²	No.	\$ 15.00
9.34.5	1 core 10mm ²	No.	\$ 20.00
9.34.6	1 core 16mm ²	No.	\$ 25.00
9.34.7	1 core 25mm ²	No.	\$ 30.00
9.34.8	1 core 35mm ²	No.	\$ 40.00
9.34.9	1 core 50mm ²	No.	\$ 55.00
9.34.10	1 core 70mm ²	No.	\$ 60.00
9.34.11	1 core 95mm ²	No.	\$ 70.00
9.34.12	1 core 120mm ²	No.	\$ 78.00
9.34.13	1 core 150mm ²	No.	\$ 85.00
9.34.14	1 core 185mm ²	No.	\$ 95.00
9.34.15	1 core 240mm ²	No.	\$ 100.00
9.34.16	1 core 300mm ²	No.	\$ 130.00
9.34.17	1 core 400mm ²	No.	\$ 135.00
9.34.18	1 core 500mm ²	No.	\$ 145.00
9.34.19	1 core 630mm ²	No.	\$ 230.00
9.34.20	1 core 800mm ²	No.	\$ 300.00
9.34.21	1 core 1000mm ²	No.	\$ 400.00
9.35	<u>Supply and install of the following metalclad distribution boards c/w neutral bar, earth bar, cover, but without MCB and RCD.</u>		
	<u>Single Phase</u>		
9.35.1	6 ways SPN	No.	\$ 150.00
9.35.2	7 ways SPN	No.	\$ 150.00
9.35.3	8 ways SPN	No.	\$ 150.00
9.35.4	9 ways SPN	No.	\$ 150.00
9.35.5	10 ways SPN	No.	\$ 150.00
9.35.6	11 ways SPN	No.	\$ 150.00
9.35.7	12 ways SPN	No.	\$ 150.00
9.35.8	13 ways SPN	No.	\$ 150.00
9.35.9	14 ways SPN	No.	\$ 150.00
9.35.10	15 ways SPN	No.	\$ 150.00
9.35.11	16 ways SPN	No.	\$ 150.00
9.35.12	17 ways SPN	No.	\$ 150.00
9.35.13	18 ways SPN	No.	\$ 150.00
	<u>Three Phase</u>		
9.35.14	3 x 6 ways SPN	No.	\$ 150.00
9.35.15	3 x 7 ways SPN	No.	\$ 150.00
9.35.16	3 x 8 ways SPN	No.	\$ 150.00
9.35.17	3 x 9 ways SPN	No.	\$ 150.00
9.35.18	3 x 10 ways SPN	No.	\$ 150.00
9.35.19	3 x 11 ways SPN	No.	\$ 165.00
9.35.20	3 x 12 ways SPN	No.	\$ 165.00
9.35.21	3 x 13 ways SPN	No.	\$ 165.00
9.35.22	3 x 14 ways SPN	No.	\$ 165.00
9.35.23	3 x 15 ways SPN	No.	\$ 165.00
9.35.24	3 x 16 ways SPN	No.	\$ 165.00
9.35.25	3 x 17 ways SPN	No.	\$ 165.00
9.35.26	3 x 18 ways SPN	No.	\$ 165.00
9.35.27	6 ways TPN	No.	\$ 150.00



Item No.	Description	Unit	Rate
9.35.28	7 ways TPN	No.	\$ 150.00
9.35.29	8 ways TPN	No.	\$ 150.00
9.35.30	9 ways TPN	No.	\$ 150.00
9.35.31	10 ways TPN	No.	\$ 150.00
9.35.32	11 ways TPN	No.	\$ 165.00
9.35.33	12 ways TPN	No.	\$ 165.00
9.35.34	13 ways TPN	No.	\$ 165.00
9.35.35	14 ways TPN	No.	\$ 165.00
9.35.36	15 ways TPN	No.	\$ 165.00
9.35.37	16 ways TPN	No.	\$ 165.00
9.35.38	17 ways TPN	No.	\$ 165.00
9.35.39	18 ways TPN	No.	\$ 165.00
	<u>Distribution Boards</u>		
9.36	<u>Supply, install, testing and commissioning of metalclad distribution boards fitted with the following circuit breakers and residual current devices c/w neutral bar, earth bar, combined busbar, cover and all necessary wiring as per DES standards and requirements.</u>		
	<u>Single Phase</u>		
9.36.1	1 x 40 Amp 10kA SP MCB, 1 x 40 Amp 30mA DP RCD, 6 ways SP MCBs.	No.	\$ 350.00
9.36.2	1 x 40 Amp 10kA SP MCB, 1 x 40 Amp 30mA DP RCD, 7 ways SP MCBs.	No.	\$ 360.00
9.36.3	1 x 40 Amp 10kA SP MCB, 1 x 40 Amp 30mA DP RCD, 8 ways SP MCBs.	No.	\$ 370.00
9.36.4	1 x 40 Amp 10kA SP MCB, 1 x 40 Amp 30mA DP RCD, 9 ways SP MCBs.	No.	\$ 380.00
9.36.5	1 x 40 Amp 10kA SP MCB, 1 x 40 Amp 30mA DP RCD, 10 ways SP MCBs.	No.	\$ 390.00
9.36.6	1 x 40 Amp 10kA SP MCB, 1 x 40 Amp 30mA DP RCD, 11 ways SP MCBs.	No.	\$ 400.00
9.36.7	1 x 40 Amp 10kA SP MCB, 1 x 40 Amp 30mA DP RCD, 12 ways SP MCBs.	No.	\$ 420.00
9.36.8	1 x 63 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 6 ways SP MCBs.	No.	\$ 400.00
9.36.9	1 x 63 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 7 ways SP MCBs.	No.	\$ 410.00
9.36.10	1 x 63 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 8 ways SP MCBs.	No.	\$ 420.00
9.36.11	1 x 63 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 9 ways SP MCBs.	No.	\$ 440.00
9.36.12	1 x 63 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 10 ways SP MCBs.	No.	\$ 450.00
9.36.13	1 x 63 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 11 ways SP MCBs.	No.	\$ 460.00
9.36.14	1 x 63 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 12 ways SP MCBs.	No.	\$ 470.00
9.36.15	1 x 63 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 13 ways SP MCBs.	No.	\$ 480.00
9.36.16	1 x 63 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 14 ways SP MCBs.	No.	\$ 490.00
9.36.17	1 x 63 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 15 ways SP MCBs.	No.	\$ 520.00
9.36.18	1 x 63 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 16 ways SP MCBs.	No.	\$ 550.00
9.36.19	1 x 63 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 17 ways SP MCBs.	No.	\$ 580.00
9.36.20	1 x 63 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 18 ways SP MCBs.	No.	\$ 610.00
9.36.21	1 x 80 Amp 10kA SP MCB, 1 x 80 Amp 30mA DP RCD, 6 ways MCBs.	No.	\$ 450.00
9.36.22	1 x 80 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 7 ways SP MCBs.	No.	\$ 460.00
9.36.23	1 x 80 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 8 ways SP MCBs.	No.	\$ 470.00
9.36.24	1 x 80 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 9 ways SP MCBs.	No.	\$ 490.00
9.36.25	1 x 80 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 10 ways SP MCBs.	No.	\$ 500.00
9.36.26	1 x 80 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 11 ways SP MCBs.	No.	\$ 510.00
9.36.27	1 x 80 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 12 ways SP MCBs.	No.	\$ 520.00
9.36.28	1 x 80 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 13 ways SP MCBs.	No.	\$ 530.00
9.36.29	1 x 80 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 14 ways SP MCBs.	No.	\$ 540.00
9.36.30	1 x 80 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 15 ways SP MCBs.	No.	\$ 550.00
9.36.31	1 x 80 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 16 ways SP MCBs.	No.	\$ 560.00
9.36.32	1 x 80 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 17 ways SP MCBs.	No.	\$ 580.00
9.36.33	1 x 80 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 18 ways SP MCBs.	No.	\$ 600.00
9.36.34	1 x 100 Amp 10kA SP MCB, 1 x 80 Amp 30mA DP RCD, 6 ways MCBs.	No.	\$ 450.00
9.36.35	1 x 100 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 7 ways SP MCBs.	No.	\$ 510.00
9.36.36	1 x 100 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 8 ways SP MCBs.	No.	\$ 520.00
9.36.37	1 x 100 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 9 ways SP MCBs.	No.	\$ 530.00



Item No.	Description	Unit	Rate
9.36.38	1 x 100 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 10 ways SP MCBs.	No.	\$ 540.00
9.36.39	1 x 100 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 11 ways SP MCBs.	No.	\$ 550.00
9.36.40	1 x 100 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 12 ways SP MCBs.	No.	\$ 560.00
9.36.41	1 x 100 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 13 ways SP MCBs.	No.	\$ 580.00
9.36.42	1 x 100 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 14 ways SP MCBs.	No.	\$ 600.00
9.36.43	1 x 100 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 15 ways SP MCBs.	No.	\$ 620.00
9.36.44	1 x 100 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 16 ways SP MCBs.	No.	\$ 640.00
9.36.45	1 x 100 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 17 ways SP MCBs.	No.	\$ 660.00
9.36.46	1 x 100 Amp 10kA SP MCB, 1 x 63 Amp 30mA DP RCD, 18 ways SP MCBs.	No.	\$ 680.00
	<u>Three Phase</u>		
9.36.47	1 x 40 Amp 10kA TPN MCB, 3 x 40 Amp 30mA DP RCD, 3 x 2 ways MCBs.	No.	\$ 600.00
9.36.48	1 x 40 Amp 10kA TPN MCB, 3 x 40 Amp 30mA DP RCD, 3 x 3 ways MCBs.	No.	\$ 630.00
9.36.49	1 x 40 Amp 10kA TPN MCB, 3 x 40 Amp 30mA DP RCD, 3 x 4 ways MCBs.	No.	\$ 680.00
9.36.50	1 x 40 Amp 10kA TPN MCB, 3 x 40 Amp 30mA DP RCD, 3 x 5 ways MCBs.	No.	\$ 720.00
9.36.51	1 x 40 Amp 10kA TPN MCB, 3 x 40 Amp 30mA DP RCD, 3 x 6 ways MCBs.	No.	\$ 750.00
9.36.52	1 x 40 Amp 10kA TPN MCB, 3 x 40 Amp 30mA DP RCD, 3 x 7 ways MCBs.	No.	\$ 780.00
9.36.53	1 x 40 Amp 10kA TPN MCB, 3 x 40 Amp 30mA DP RCD, 3 x 8 ways MCBs.	No.	\$ 850.00
9.36.54	1 x 40 Amp 10kA TPN MCB, 3 x 40 Amp 30mA DP RCD, 3 x 9 ways MCBs.	No.	\$ 980.00
9.36.55	1 x 40 Amp 10kA TPN MCB, 3 x 40 Amp 30mA DP RCD, 3 x 10 ways MCBs.	No.	\$ 1,020.00
9.36.56	1 x 40 Amp 10kA TPN MCB, 3 x 40 Amp 30mA DP RCD, 3 x 11 ways MCBs.	No.	\$ 1,050.00
9.36.57	1 x 40 Amp 10kA TPN MCB, 3 x 40 Amp 30mA DP RCD, 3 x 12 ways MCBs.	No.	\$ 1,100.00
9.36.58	1 x 63 Amp 10kA TPN MCB, 3 x 63 Amp 30mA DP RCD, 3 x 2 ways MCBs.	No.	\$ 680.00
9.36.59	1 x 63 Amp 10kA TPN MCB, 3 x 63 Amp 30mA DP RCD, 3 x 3 ways MCBs.	No.	\$ 720.00
9.36.60	1 x 63 Amp 10kA TPN MCB, 3 x 63 Amp 30mA DP RCD, 3 x 4 ways MCBs.	No.	\$ 750.00
9.36.61	1 x 63 Amp 10kA TPN MCB, 3 x 63 Amp 30mA DP RCD, 3 x 5 ways MCBs.	No.	\$ 800.00
9.36.62	1 x 63 Amp 10kA TPN MCB, 3 x 63 Amp 30mA DP RCD, 3 x 6 ways MCBs.	No.	\$ 850.00
9.36.63	1 x 63 Amp 10kA TPN MCB, 3 x 63 Amp 30mA DP RCD, 3 x 7 ways MCBs.	No.	\$ 900.00
9.36.64	1 x 63 Amp 10kA TPN MCB, 3 x 63 Amp 30mA DP RCD, 3 x 8 ways MCBs.	No.	\$ 950.00
9.36.65	1 x 63 Amp 10kA TPN MCB, 3 x 63 Amp 30mA DP RCD, 3 x 9 ways MCBs.	No.	\$ 1,000.00
9.36.66	1 x 63 Amp 10kA TPN MCB, 3 x 63 Amp 30mA DP RCD, 3 x 10 ways MCBs.	No.	\$ 1,050.00
9.36.67	1 x 63 Amp 10kA TPN MCB, 3 x 63 Amp 30mA DP RCD, 3 x 11 ways MCBs.	No.	\$ 1,100.00
9.36.68	1 x 63 Amp 10kA TPN MCB, 3 x 63 Amp 30mA DP RCD, 3 x 12 ways MCBs.	No.	\$ 1,150.00
9.36.69	1 x 63 Amp 10kA TPN MCB, 3 x 63 Amp 30mA DP RCD, 3 x 13 ways MCBs.	No.	\$ 1,200.00
9.36.70	1 x 63 Amp 10kA TPN MCB, 3 x 63 Amp 30mA DP RCD, 3 x 14 ways MCBs.	No.	\$ 1,250.00
9.36.71	1 x 63 Amp 10kA TPN MCB, 3 x 63 Amp 30mA DP RCD, 3 x 15 ways MCBs.	No.	\$ 1,400.00
9.36.72	1 x 63 Amp 10kA TPN MCB, 3 x 63 Amp 30mA DP RCD, 3 x 16 ways MCBs.	No.	\$ 1,450.00
9.36.73	1 x 63 Amp 10kA TPN MCB, 3 x 63 Amp 30mA DP RCD, 3 x 17 ways MCBs.	No.	\$ 1,550.00
9.36.74	1 x 63 Amp 10kA TPN MCB, 3 x 63 Amp 30mA DP RCD, 3 x 18 ways MCBs.	No.	\$ 1,650.00
9.36.75	1 x 80 Amp 10kA TPN MCB, 3 x 80 Amp 30mA DP RCD, 3 x 2 ways MCBs.	No.	\$ 750.00
9.36.76	1 x 80 Amp 10kA TPN MCB, 3 x 80 Amp 30mA DP RCD, 3 x 3 ways MCBs.	No.	\$ 800.00
9.36.77	1 x 80 Amp 10kA TPN MCB, 3 x 80 Amp 30mA DP RCD, 3 x 4 ways MCBs.	No.	\$ 850.00
9.36.78	1 x 80 Amp 10kA TPN MCB, 3 x 80 Amp 30mA DP RCD, 3 x 5 ways MCBs.	No.	\$ 900.00
9.36.79	1 x 80 Amp 10kA TPN MCB, 3 x 80 Amp 30mA DP RCD, 3 x 6 ways MCBs.	No.	\$ 950.00
9.36.80	1 x 80 Amp 10kA TPN MCB, 3 x 80 Amp 30mA DP RCD, 3 x 7 ways MCBs.	No.	\$ 1,000.00
9.36.81	1 x 80 Amp 10kA TPN MCB, 3 x 80 Amp 30mA DP RCD, 3 x 8 ways MCBs.	No.	\$ 1,050.00
9.36.82	1 x 80 Amp 10kA TPN MCB, 3 x 80 Amp 30mA DP RCD, 3 x 9 ways MCBs.	No.	\$ 1,150.00
9.36.83	1 x 80 Amp 10kA TPN MCB, 3 x 80 Amp 30mA DP RCD, 3 x 10 ways MCBs.	No.	\$ 1,250.00
9.36.84	1 x 80 Amp 10kA TPN MCB, 3 x 80 Amp 30mA DP RCD, 3 x 11 ways MCBs.	No.	\$ 1,350.00
9.36.85	1 x 80 Amp 10kA TPN MCB, 3 x 80 Amp 30mA DP RCD, 3 x 12 ways MCBs.	No.	\$ 1,450.00
9.36.86	1 x 80 Amp 10kA TPN MCB, 3 x 80 Amp 30mA DP RCD, 3 x 13 ways MCBs.	No.	\$ 1,550.00
9.36.87	1 x 80 Amp 10kA TPN MCB, 3 x 80 Amp 30mA DP RCD, 3 x 14 ways MCBs.	No.	\$ 1,650.00
9.36.88	1 x 80 Amp 10kA TPN MCB, 3 x 80 Amp 30mA DP RCD, 3 x 15 ways MCBs.	No.	\$ 1,700.00
9.36.89	1 x 80 Amp 10kA TPN MCB, 3 x 80 Amp 30mA DP RCD, 3 x 16 ways MCBs.	No.	\$ 1,750.00
9.36.90	1 x 80 Amp 10kA TPN MCB, 3 x 80 Amp 30mA DP RCD, 3 x 17 ways MCBs.	No.	\$ 1,850.00
9.36.91	1 x 100 Amp 10kA TPN MCB, 3 x 100 Amp 30mA DP RCD, 3 x 18 ways MCBs.	No.	\$ 2,000.00



Item No.	Description	Unit	Rate
9.36.92	1 x 100Amp 10kA TPN MCB, 3 x 100 Amp 30mA DP RCD, 3 x 2 ways MCBs.	No.	\$ 850.00
9.36.93	1 x 100 Amp 10kA TPN MCB, 3 x 100 Amp 30mA DP RCD, 3 x 3 ways MCBs.	No.	\$ 900.00
9.36.94	1 x 100 Amp 10kA TPN MCB, 3 x 100 Amp 30mA DP RCD, 3 x 4 ways MCBs.	No.	\$ 950.00
9.36.95	1 x 100 Amp 10kA TPN MCB, 3 x 100 Amp 30mA DP RCD, 3 x 5 ways MCBs.	No.	\$ 1,000.00
9.36.96	1 x 100 Amp 10kA TPN MCB, 3 x 100 Amp 30mA DP RCD, 3 x 6 ways MCBs.	No.	\$ 1,100.00
9.36.97	1 x 100 Amp 10kA TPN MCB, 3 x 100 Amp 30mA DP RCD, 3 x 7 ways MCBs.	No.	\$ 1,200.00
9.36.98	1 x 100 Amp 10kA TPN MCB, 3 x 100 Amp 30mA DP RCD, 3 x 8 ways MCBs.	No.	\$ 1,300.00
9.36.99	1 x 100 Amp 10kA TPN MCB, 3 x 100 Amp 30mA DP RCD, 3 x 9 ways MCBs.	No.	\$ 1,350.00
9.36.100	1 x 100 Amp 10kA TPN MCB, 3 x 100 Amp 30mA DP RCD, 3 x 10 ways MCBs.	No.	\$ 1,400.00
9.36.101	1 x 100 Amp 10kA TPN MCB, 3 x 100 Amp 30mA DP RCD, 3 x 11 ways MCBs.	No.	\$ 1,500.00
9.36.102	1 x 100 Amp 10kA TPN MCB, 3 x 100 Amp 30mA DP RCD, 3 x 12 ways MCBs.	No.	\$ 1,600.00
9.36.103	1 x 100 Amp 10kA TPN MCB, 3 x 100 Amp 30mA DP RCD, 3 x 13 ways MCBs.	No.	\$ 1,700.00
9.36.104	1 x 100 Amp 10kA TPN MCB, 3 x 100 Amp 30mA DP RCD, 3 x 14 ways MCBs.	No.	\$ 1,800.00
9.36.105	1 x 100 Amp 10kA TPN MCB, 3 x 1000 Amp 30mA DP RCD, 3 x 15 ways MCBs.	No.	\$ 1,900.00
9.36.106	1 x 100 Amp 10kA TPN MCB, 3 x 100 Amp 30mA DP RCD, 3 x 16 ways MCBs.	No.	\$ 2,000.00
9.36.107	1 x 100 Amp 10kA TPN MCB, 3 x 100 Amp 30mA DP RCD, 3 x 17 ways MCBs.	No.	\$ 2,200.00
9.36.108	1 x 100 Amp 10kA TPN MCB, 3 x 100 Amp 30mA DP RCD, 3 x 18 ways MCBs.	No.	\$ 2,500.00
9.36.109	1 x 40 Amp 10kA TPN MCB, 1 x 40 Amp 30mA 4P RCD, 6 ways MCBs	No.	\$ 550.00
9.36.110	1 x 40 Amp 10kA TPN MCB, 1 x 40 Amp 30mA 4P RCD, 7 ways MCBs	No.	\$ 570.00
9.36.111	1 x 40 Amp 10kA TPN MCB, 1 x 40 Amp 30mA 4P RCD, 8 ways MCBs.	No.	\$ 590.00
9.36.112	1 x 40 Amp 10kA TPN MCB, 1 x 40 Amp 30mA 4P RCD, 9 ways MCBs.	No.	\$ 620.00
9.36.113	1 x 40 Amp 10kA TPN MCB, 1 x 40 Amp 30mA 4P RCD, 10 ways MCBs.	No.	\$ 640.00
9.36.114	1 x 40 Amp 10kA TPN MCB, 1 x 40 Amp 30mA 4P RCD, 11 ways MCBs.	No.	\$ 680.00
9.36.115	1 x 40 Amp 10kA TPN MCB, 1 x 40 Amp 30mA 4P RCD, 12 ways MCBs.	No.	\$ 750.00
9.36.116	1 x 63 Amp 10kA TPN MCB, 1 x 63 Amp 30mA 4P RCD, 6 ways MCBs.	No.	\$ 620.00
9.36.117	1 x 63 Amp 10kA TPN MCB, 1 x 63 Amp 30mA 4P RCD, 7 ways MCBs.	No.	\$ 640.00
9.36.118	1 x 63 Amp 10kA TPN MCB, 1 x 63 Amp 30mA 4P RCD, 8 ways MCBs.	No.	\$ 660.00
9.36.119	1 x 63 Amp 10kA TPN MCB, 1 x 63 Amp 30mA 4P RCD, 9 ways MCBs.	No.	\$ 680.00
9.36.120	1 x 63 Amp 10kA TPN MCB, 1 x 63 Amp 30mA 4P RCD, 10 ways MCBs.	No.	\$ 700.00
9.36.121	1 x 63 Amp 10kA TPN MCB, 1 x 63 Amp 30mA 4P RCD, 11 ways MCBs.	No.	\$ 720.00
9.36.122	1 x 63 Amp 10kA TPN MCB, 1 x 63 Amp 30mA 4P RCD, 12 ways MCBs.	No.	\$ 780.00
9.36.123	1 x 63 Amp 10kA TPN MCB, 1 x 63 Amp 30mA 4P RCD, 13 ways MCBs.	No.	\$ 820.00
9.36.124	1 x 63 Amp 10kA TPN MCB, 1 x 63 Amp 30mA 4P RCD, 14 ways MCBs.	No.	\$ 820.00
9.36.125	1 x 63 Amp 10kA TPN MCB, 1 x 63 Amp 30mA 4P RCD, 15 ways MCBs.	No.	\$ 840.00
9.36.126	1 x 63 Amp 10kA TPN MCB, 1 x 63 Amp 30mA 4P RCD, 16 ways MCBs.	No.	\$ 860.00
9.36.127	1 x 63 Amp 10kA TPN MCB, 1 x 63 Amp 30mA 4P RCD, 17 ways MCBs.	No.	\$ 880.00
9.36.128	1 x 63 Amp 10kA TPN MCB, 1 x 63 Amp 30mA 4P RCD, 18 ways MCBs.	No.	\$ 920.00
9.36.129	1 x 80 Amp 10kA TPN MCB, 1 x 80 Amp 30mA 4P RCD, 6 ways MCBs.	No.	\$ 680.00
9.36.130	1 x 80 Amp 10kA TPN MCB, 1 x 80 Amp 30mA 4P RCD, 7 ways MCBs.	No.	\$ 700.00
9.36.131	1 x 80 Amp 10kA TPN MCB, 1 x 80 Amp 30mA 4P RCD, 8 ways MCBs.	No.	\$ 720.00
9.36.132	1 x 80 Amp 10kA TPN MCB, 1 x 80 Amp 30mA 4P RCD, 9 ways MCBs.	No.	\$ 740.00
9.36.133	1 x 80 Amp 10kA TPN MCB, 1 x 80 Amp 30mA 4P RCD, 10 ways MCBs.	No.	\$ 780.00
9.36.134	1 x 80 Amp 10kA TPN MCB, 1 x 80 Amp 30mA 4P RCD, 11 ways MCBs.	No.	\$ 820.00
9.36.135	1 x 80 Amp 10kA TPN MCB, 1 x 80 Amp 30mA 4P RCD, 12 ways MCBs.	No.	\$ 840.00
9.36.136	1 x 80 Amp 10kA TPN MCB, 1 x 80 Amp 30mA 4P RCD, 13 ways MCBs.	No.	\$ 880.00
9.36.137	1 x 80 Amp 10kA TPN MCB, 1 x 80 Amp 30mA 4P RCD, 14 ways MCBs.	No.	\$ 920.00
9.36.138	1 x 80 Amp 10kA TPN MCB, 1 x 80 Amp 30mA 4P RCD, 15 ways MCBs.	No.	\$ 960.00
9.36.139	1 x 80 Amp 10kA TPN MCB, 1 x 80 Amp 30mA 4P RCD, 16 ways MCBs.	No.	\$ 1,000.00
9.36.140	1 x 80 Amp 10kA TPN MCB, 1 x 80 Amp 30mA 4P RCD, 17 ways MCBs.	No.	\$ 1,050.00
9.36.141	1 x 80 Amp 10kA TPN MCB, 1 x 80 Amp 30mA 4P RCD, 18 ways MCBs.	No.	\$ 1,080.00
9.36.142	1 x 100 Amp 10kA TPN MCB, 1 x 100 Amp 30mA 4P RCD, 6 ways MCBs.	No.	\$ 720.00
9.36.143	1 x 100 Amp 10kA TPN MCB, 1 x 100 Amp 30mA 4P RCD, 7 ways MCBs.	No.	\$ 750.00
9.36.144	1 x 100 Amp 10kA TPN MCB, 1 x 100 Amp 30mA 4P RCD, 8 ways MCBs.	No.	\$ 770.00
9.36.145	1 x 100 Amp 10kA TPN MCB, 1 x 100 Amp 30mA 4P RCD, 9 ways MCBs.	No.	\$ 790.00
9.36.146	1 x 100 Amp 10kA TPN MCB, 1 x 100 Amp 30mA 4P RCD, 10 ways MCBs.	No.	\$ 820.00
9.36.147	1 x 100 Amp 10kA TPN MCB, 1 x 100 Amp 30mA 4P RCD, 11 ways MCBs.	No.	\$ 850.00



Item No.	Description	Unit	Rate
9.36.148	1 x 100 Amp 10kA TPN MCB, 1 x 100 Amp 30mA 4P RCD, 12 ways MCBs.	No.	\$ 880.00
9.36.149	1 x 100 Amp 10kA TPN MCB, 1 x 100 Amp 30mA 4P RCD, 13 ways MCBs.	No.	\$ 910.00
9.36.150	1 x 100 Amp 10kA TPN MCB, 1 x 100 Amp 30mA 4P RCD, 14 ways MCBs.	No.	\$ 960.00
9.36.151	1 x 100 Amp 10kA TPN MCB, 1 x 100 Amp 30mA 4P RCD, 15 ways MCBs.	No.	\$ 1,010.00
9.36.152	1 x 100 Amp 10kA TPN MCB, 1 x 100 Amp 30mA 4P RCD, 16 ways MCBs.	No.	\$ 1,060.00
9.36.153	1 x 100 Amp 10kA TPN MCB, 1 x 100 Amp 30mA 4P RCD, 17 ways MCBs.	No.	\$ 1,100.00
9.36.154	1 x 100 Amp 10kA TPN MCB, 1 x 100 Amp 30mA 4P RCD, 18 ways MCBs.	No.	\$ 1,150.00
9.37	<u>TPN MCCB in metal enclosure Distribution Board c/w 3 x RCD / 30MA and MCB's, timer, photocell, contactor, 2A fuse</u>		
9.37.1	40A TPN MCCB - 18 ways	No.	\$ 850.00
9.37.2	63A TPN MCCB - 18 ways	No.	\$ 1,500.00
9.37.3	63A TPN MCCB - 24 ways	No.	\$ 2,000.00
9.37.4	63A TPN MCCB - 36 ways	No.	\$ 2,200.00
9.37.5	40A TPN MCCB - 24 ways	No.	\$ 1,300.00
9.37.6	100A TPN MCCB - 24 ways	No.	\$ 3,300.00
9.37.7	100A TPN MCCB - 36 ways	No.	\$ 3,500.00
9.37.8	40A SPN MCCB - 10 ways	No.	\$ 680.00
9.37.9	63A SPN MCCB - 10 ways	No.	\$ 950.00
9.37.10	40A SPN MCCB - 12 ways	No.	\$ 1,000.00
9.37.11	63A SPN MCCB - 12 ways	No.	\$ 1,200.00
9.38	Single Phase Prepaid Meter liase with DES	No.	\$ 500.00
9.39	<u>Digital Type Trip Unit for ACB incorporated multi functional time setting and multi functional curve setting for IDMTL Earth Fault Relay and IDMTL Overcurrent Relay, include program as per site condition, modification, connection of all control tray and shunt trip coil c/w necessary works and accesories required.</u>		
9.39.1	For ACB less than 1600A	No.	\$ 14,000.00
9.39.2	For ACB more than 1800A	No.	\$ 20,000.00
9.40	Padlock and chain for main switch room / transformer room	No.	\$ 150.00
9.41	Standard Electrical Safety Signages	No.	\$ 150.00



Item No.	Description	Unit	Rate
10.0	<p><u>MAIN SWITCHBOARD MAINTENANCE / BREAKDOWN / RECTIFICATION</u></p> <p>* IMPORTANT NOTE</p> <p><i>The Following unit rates apply for supplying new item, installation, delivery, labour charges for every installation, dismantle, modification, realign, relocate of existing items and complete with related consumable materials if required, Manpower to be used will be for works will be inclusive EXCEPT for standby as per required will be paid by per hours.</i></p>		
10.1	<p><u>To attend breakdown and on call basis</u></p> <p>The supervisor / technicians should have experience knowledge for all MSB systems and troubleshooting, awarded contractor must also have all the testing meter / equipments and other related materials to be standby all the times and shall do proper inspection, troubleshooting, testing for the caused of the problem, all consumable materials shall be included on the rate. Type of testing to be done will not be limited and shall be as proper standard MSB REQUIREMENT PROCEDURE</p> <p>The Scope of works will include as below:</p> <ul style="list-style-type: none"> • To check all breakers, protection relays, devices, connections and metal clad enclosure front door, back door and skid base. • To Check cable and connection primary and secondary cables. • Check control wiring and connection including relays, timers and bases. • To Check interface connection with other equipments like standby generator, high mast panels for sign of excessive heat (cable and busbar connection) • To inspect all 30A, 60A, 100A, 200A, 250A, 300A, 400A, 500A, 600A, 800A outgoing MCCB for all the contacts and screws for termination at incoming & outgoing, which includes manually operated all ON / OFF breakers. <p>* Note : Numbers of hours / days are not limited on site (until the problems are rectified / solved / in good conditions) and will be based on per call for the breakdown area. Repeated call based on that area will be considered as only one lot.</p> <p>* All Contractor should attached the supervisor / technicians qualifications, valid DES worker pass, working experience and other related attachment related to the field. Failure to attached the data resume will not be considered to be selected (not complying with specification)</p>	Lot	\$ 100.00



Item No.	Description	Unit	Rate
10.2	<u>Air circuit breakers service maintenance (servicing / repair / troubleshooting etc)</u> To check / repair / service the main circuit terminal, internal parts of isolating main contacts, moving contacts, control circuits terminal, Arc chambers, Arc chute, moulded insulated covers, internal protective current transformers, power CT, Draw out function, spring charging handle, draw out cradle, breakers fixing terminal position indicator, to check the control circuit safety shutters, main control circuit safety shutters, test jumpers, to clean the terminal chassis, to lubricate all the internal springs, screws, gears, and parts, to check all ON/OFF function, to check the mechanical shaft, to check the shunt trip coil, reinsert the ACB and test the function. Rate to include supply, repair broken, loose, rusty springs, screws, Mechanical key interlocking system, key locks and control circuit. Rate to include troubleshooting / consumable materials / parts replacement / and all related works required for servicing the ACB, shunt trip coils, IDMTL mechanical type over current relays at Main incoming Air circuit breakers.	Lot	\$ 500.00
10.3	<u>To general service, clean and check switchboards; busbar, hotspot, connections of fuses and breakers, mounting, auxillary equipment and calibrating, balancing where necessary as per instructed by s.o. contractor to submit report for verification:-</u>		
10.3.1	up To 150A	No.	\$ 300.00
10.3.2	200A - 400A	No.	\$ 400.00
10.3.3	400A - 800A	No.	\$ 500.00
10.3.4	800A - 1200A	No.	\$ 1,500.00
10.3.5	1200A - 1600A	No.	\$ 2,500.00
10.3.6	1600A and above	No.	\$ 5,000.00
10.4	<u>Temporary Emergency Cable</u>		
10.4.1	To make temporary emergency connection cable from DES transformer / Feeder Pillar / Genset Change over and etc to Substation Main Switchboard / Control Panel / Motor Pump and etc. Work will also be including for any requirement or instructed by S.O. Rate to include supply of temporary service cable, joint kit, cable lug and other related required materials on site. Rate will include to install connection and dismantling once the problem or faulty are rectified.	Lot	\$ 800.00
10.4.2	To Make temporary emergency connection cable to by pass ACB breaker temporary for emergency cases. Work will also include any requirement or instructed by S.O. Rate to include supply of temporary service cable, joint kit, cable lug and other related required materials on site. Rate will include to install connection and dismantling once the problem or faulty are rectified.	Lot	\$ 400.00
10.5	<u>Main Switchboard Housekeeping</u>		
10.5.1	To do Housekeeping on the Main Switchboard and pump house room. Rate to clean all main switchboard panel / housing and all requirement from S.O	Lot	\$ 150.00
10.6	To conduct periodic inspection and testing on the existing distribution board, 5 years interval, as per DES standards and requirements as stated in Electrical Installation Requirements 2011 - First Edition (EIR).	No.	\$ 200.00



Item No.	Description	Unit	Rate
11.0	<u>SUPPLY, DELIVERY AND INSTALL OF LIGHT FITTING, FANS & OTHERS</u>		
	<u>Supply, delivery and install as follows:</u>		
11.1	<u>Fluorescent surface batten fitting c/w day light tube, 240V 50HZ ballast, capacitor, starter etc.</u>		
11.1.1	1 x 18W	No.	\$ 30.00
11.1.2	1 x 36W	No.	\$ 35.00
11.1.3	1 x 65W	No.	\$ 100.00
11.2	<u>LED Light surface batten fitting c/w daylight / warmlight / Coloured LED tube</u>		
11.2.1	1 x 8W	No.	\$ 35.00
11.2.2	1 x 16W	No.	\$ 36.00
11.2.3	2 x 16W	No.	\$ 51.00
11.3	<u>Fluorescent surface batten fitting c/w daylight / warmlight / Coloured tube, 240V 50Hz, ballast capacitor, starter etc</u>		
11.3.1	2 x 18W	No.	\$ 48.00
11.3.2	2 x 36W	No.	\$ 55.00
11.3.3	2 x 65W	No.	\$ 130.00
11.4	<u>Metal reflector surface fluorescent batten fitting c/w daylight / warmlight / coloured tube, 240V 50Hz, ballast, capacitor, starter etc</u>		
11.4.1	1 x 18W	No.	\$ 38.00
11.4.2	1 x 36W	No.	\$ 45.00
11.4.3	2 x 18W	No.	\$ 65.00
11.4.4	2 x 36W	No.	\$ 70.00
11.4.5	3 x 36W	No.	\$ 120.00
11.4.6	4 x 36W	No.	\$ 150.00
11.5	<u>Surface mirror louver type fluorescent fitting c/w daylight / warmlight / coloured tube, 240V 50Hz, ballast, capacitor starter etc.</u>		
11.5.1	2 x 18W	No.	\$ 80.00
11.5.2	3 x 18W	No.	\$ 140.00
11.5.3	4 x 18W	No.	\$ 180.00
11.5.4	2 x 36W	No.	\$ 135.00
11.5.5	3 x 36W	No.	\$ 160.00
11.5.6	4 x 36W	No.	\$ 180.00
11.6	<u>Recessed type fluorescent fitting c/w daylight / warmlight / coloured tube, 240V 50Hz, ballast, capacitor, starter etc</u>		
11.6.1	2 x 18W	No.	\$ 90.00
11.6.2	3 x 18W	No.	\$ 140.00
11.6.3	4 x 18W	No.	\$ 188.00
11.6.4	2 x 36W	No.	\$ 135.00
11.6.5	3 x 36W	No.	\$ 160.00
11.6.6	4 x 36W	No.	\$ 180.00
11.7	<u>Surface IP54 weatherproof fluorescent fitting c/w daylight / warmlight / coloured tube, 240V 50Hz ballast, capacitor, starter etc.</u>		
11.7.1	1 x 18W	No.	\$ 65.00
11.7.2	2 x 18W	No.	\$ 100.00
11.7.3	1 x 36W	No.	\$ 80.00
11.7.4	2 x 26W	No.	\$ 120.00



Item No.	Description	Unit	Rate
11.8	<u>Flourescent Tube Bare Light Fittings (T5 Type)</u>		
11.8.1	1 x 28W Batten Fitting C/w Tube	No.	\$ 16.00
11.8.2	1 x 13W Batten Fitting C/w Tube	No.	\$ 15.00
11.8.3	2 x 28W Batten Fitting C/w Tube	No.	\$ 23.00
11.8.4	2 x 13W Batten Fitting C/w Tube	No.	\$ 21.00
11.8.5	3 x 28W Mirror Louver Fitting	No.	\$ 87.00
11.9	<u>Fluorescent tube batten type or standard diffuser type light fittings or mirror reflector (complete set) - T5 type of fittings</u>		
11.9.1	1 x 28W Batten diffuser fitting c/w tube	No.	\$ 25.00
11.9.2	1 x 13W Batten diffuser fitting c/w tube	No.	\$ 23.00
11.9.3	2 x 28W Batten diffuser fitting c/w tube	No.	\$ 33.00
11.9.4	2 x 13W Batten diffuser fitting c/w tube	No.	\$ 30.00
11.10	<u>Flourescent Tube Prismatic Light Fittings - T5 type of fittings</u>		
11.10.1	2 x 28W 1FT x4FT Surface Prismatic c/w tube	No.	\$ 60.00
11.10.2	2 x 13W 1FT x 2FT Surface Prismatic c/w tube	No.	\$ 57.00
11.11	<u>Flourescent Tube Recessed Light Fittings - T5 type of fittings</u>		
11.11.1	2 x 28W 1 FT x 4FT Recessed mirror louver c/w tube	No.	\$ 70.00
11.11.2	3 x 28W 2 FT x 4FT Recessed mirror louver c/w tube	No.	\$ 87.00
11.11.3	4 x 28W 2FT x 4FT Recessed mirror louver c/w tube	No.	\$ 143.00
11.11.4	3 x 13W 2FT x 2FT Recessed mirror louver c/w tube	No.	\$ 66.00
11.11.5	4 x 13W 1 FT x 4FT Recessed mirror louver c/w tube	No.	\$ 75.00
11.12	<u>Standard LED Weatherproof Fittings - T5 Type of fittings</u>		
11.12.1	1 x 18W c/w tube	No.	\$ 30.00
11.12.2	2 x 18W c/w tube	No.	\$ 35.00
11.13	<u>LED Tube Bare Light Fittings (T8 Type)</u>		
11.13.1	1 x 28W Batten Fitting c/w Tube	No.	\$ 40.00
11.13.2	1 x 18W Batten Fitting c/w Tube	No.	\$ 38.00
11.13.3	1 x 9W Batten Fitting c/w Tube	No.	\$ 35.00
11.13.4	2 x 28W Batten Fitting c/w Tube	No.	\$ 55.00
11.13.5	2 x 18W Batten Fitting c/w Tube	No.	\$ 52.00
11.13.6	3 x 28W Mirror Louver Fitting	No.	\$ 87.00
11.14	<u>LED Tube Prismatic Light Fittings - T8 type of fittings</u>		
11.14.1	2 x 28W 1FT x4FT Surface Prismatic c/w tube	No.	\$ 60.00
11.14.2	2 x 13W 1FT x 2FT Surface Prismatic c/w tube	No.	\$ 57.00
11.15	<u>Standard LED Weatherproof Fittings c/w LED tube - T8 Type of fittings</u>		
11.15.1	1 x 9W	No.	\$ 20.00
11.15.2	2 x 9W	No.	\$ 25.00
11.15.3	1 x 18W	No.	\$ 25.00
11.15.4	2 x 18W	No.	\$ 30.00
11.16	<u>LED Mirror Louver Fitting (recessed / Mounted) c/w LED tube - T8 type of fittings</u>		
11.16.1	2 x 9W	No.	\$ 80.00
11.16.2	3 x 9W	No.	\$ 140.00
11.16.3	4 x 9W	No.	\$ 180.00
11.16.4	2 x 18W	No.	\$ 135.00
11.16.5	3 x 18W	No.	\$ 160.00
11.16.6	4 x 18W	No.	\$ 180.00



Item No.	Description	Unit	Rate
11.17	<u>LED Panel Light type (recessed / Mounted) c/w LED tube - T8 type of fittings</u>		
11.17.1	2 x 9W	No.	\$ 80.00
11.17.2	3 x 9W	No.	\$ 130.00
11.17.3	2 x 18W	No.	\$ 135.00
11.17.4	3 x 18W	No.	\$ 160.00
11.18	<u>High bay fitting with polycarbonate reflector, 240V 50Hz mercury bulbs, control gear, ignitor, capacitor and chain</u>		
11.18.1	150W	No.	\$ 350.00
11.18.2	250W	No.	\$ 460.00
11.18.3	400W	No.	\$ 550.00
11.19	<u>High bay fitting with polycarbonate reflector, 240V, 50Hz metal halide lamp, control gear, ignitor, capacitor and chain</u>		
11.19.1	150W	No.	\$ 380.00
11.19.2	250W	No.	\$ 450.00
11.19.3	400W	No.	\$ 520.00
11.20	<u>SON/T Floodlight fitting IP54 c/w 70W lamp, ignitor, ballast, capcitor 240V 50Hz etc.</u>		
11.20.1	70W	No.	\$ 250.00
11.20.2	150W	No.	\$ 350.00
11.20.3	250W	No.	\$ 480.00
11.20.4	400W	No.	\$ 540.00
11.20.5	1000W	No.	\$ 610.00
11.21	<u>Metal Halide lamp</u>		
11.21.1	70W	No.	\$ 250.00
11.21.2	150W	No.	\$ 380.00
11.21.3	250W	No.	\$ 490.00
11.21.4	400W	No.	\$ 550.00
11.22	<u>Surface circular fluorescent fitting c/w 22W circular tube, 240V 50Hz ballast, capacitor, starter</u>		
11.22.1	1 x 22W	No.	\$ 60.00
11.22.2	1 x 32W	No.	\$ 85.00
11.22.3	1 x 40W	No.	\$ 100.00
11.23	<u>Ceiling mounted surface round type fitting E27 c/w 60W GLS lamp</u>		
11.23.1	40W	No.	\$ 85.00
11.23.2	60W	No.	\$ 90.00
11.23.3	80W	No.	\$ 100.00
11.23.4	100W	No.	\$ 140.00
11.24	<u>Wall mounted surface type c/w GLS lamp E27</u>		
11.24.1	40W	No.	\$ 100.00
11.24.2	60W	No.	\$ 120.00
11.24.3	80W	No.	\$ 160.00
11.24.4	100W	No.	\$ 200.00
11.25	<u>Ceiling mounted/wall mounted prismatic bulkhead fitting 240V 50Hz, ballast, lamp starter etc.</u>		
11.25.1	1 x 60W	No.	\$ 65.00
11.25.2	1 x 80W	No.	\$ 75.00
11.25.3	1 x 100W	No.	\$ 85.00
11.25.4	1 x 120W	No.	\$ 90.00
11.25.5	PAR 38 type spotlight fitting c/w 80W lamp 240V 50Hz	No.	\$ 80.00
11.25.6	PAR 38 type spotlight fitting c/w 120W lamp 240V 50Hz	No.	\$ 110.00



Item No.	Description	Unit	Rate
11.26	<u>Obstruction light mounted on roof / high level IP54 cast aluminium alloy, aviation. Red/Yellow glass 240V 50Hz lamp with bayonet base</u>		
11.26.1	Below 40m height	No.	\$ 700.00
11.26.2	Above 40m height	No.	\$ 2,800.00
11.27	<u>Supply and install hot-dipped galvanized pole c/w mounting flanges, bolts & nuts and necessary accessories.</u>		
11.27.1	Height: 1000mm	No.	\$ 348.00
11.27.2	Height: 1500mm	No.	\$ 372.00
11.28	<u>Keluar Sign Fitting</u>		
11.28.1	1 x 8W	No.	\$ 120.00
11.28.2	2 x 8W	No.	\$ 140.00
11.29	<u>PLC downlight fitting c/w 2 pin lamp</u>		
11.29.1	1 x 13W	No.	\$ 60.00
11.29.2	1 x 18W	No.	\$ 75.00
11.29.3	1 x 26W	No.	\$ 90.00
11.29.4	2 x 9W	No.	\$ 70.00
11.29.5	2 x 13W	No.	\$ 100.00
11.29.6	2 x 18W	No.	\$ 110.00
11.29.7	2 x 26W	No.	\$ 120.00
11.30	<u>Down light fitting c/w E27 energy saving lamp</u>		
11.30.1	1 x 13W	No.	\$ 30.00
11.30.2	1 x 18W	No.	\$ 38.00
11.30.3	1 x 26W	No.	\$ 40.00
11.30.4	2 x 18W	No.	\$ 60.00
11.31	<u>LED Downlight (recessed mounted Round / Square)</u>		
11.31.1	6W - 8W	No.	\$ 20.00
11.31.2	12W - 18W	No.	\$ 40.00
11.31.3	21W - 24W	No.	\$ 50.00
11.32	<u>PLC surface circular / wall fitting c/w lamp 240V 50 Hz ballast etc.</u>		
11.32.1	2 x 9W	No.	\$ 78.00
11.32.2	2 x 11W	No.	\$ 90.00
11.32.3	2 x 18W	No.	\$ 110.00
11.32.4	1 x 50W Halogen downlight c/w 12V transformer, 50W halogen lamp etc.	No.	\$ 100.00
11.33	<u>LED floodlight Die Cast Aluminium finished c/w control box</u>		
11.33.1	10W	No.	\$ 40.00
11.33.2	20W	No.	\$ 80.00
11.33.3	40W	No.	\$ 150.00
11.33.4	60W	No.	\$ 220.00
11.33.5	90W - 150W	No.	\$ 350.00
11.33.6	180W - 200W	No.	\$ 420.00
11.33.7	220W - 300W	No.	\$ 500.00
11.34	1.5m (56/60inch) dia. ceiling fan c/w regulator including rod modification as instructed by S.O	No.	\$ 105.00
11.35	22" stand fan	No.	\$ 180.00
11.36	25 inch dia. industrial wall fan	No.	\$ 180.00
11.37	16 inch dia. wall fan	No.	\$ 100.00



Item No.	Description	Unit	Rate
11.38	20 inch dia. wall fan	No.	\$ 160.00
11.39	16 inch dia. Auto fan	No.	\$ 100.00
11.40	<u>Glass mounted exhaust fan c/w cutting glass</u>		
11.40.1	6 inch dia.	No.	\$ 90.00
11.40.2	8 inch dia.	No.	\$ 120.00
11.41	<u>Wall mounted exhaust fan</u>		
11.41.1	6 inch dia.	No.	\$ 100.00
11.41.2	8 inch dia.	No.	\$ 130.00
11.41.3	10 inch dia.	No.	\$ 150.00
11.41.4	12 inch dia.	No.	\$ 190.00
11.41.5	16 inch dia.	No.	\$ 250.00
11.42	<u>Heavy duty exhaust fan c/w auto shutte</u>		
11.42.1	18 inch	No.	\$ 650.00
11.42.2	20 inch	No.	\$ 750.00
11.43	<u>Ceiling Mounted Duct Type Exhaust Fan c/w necessary duct works to existing duct and connector</u>		
11.43.1	4 inch	No.	\$ 150.00
11.43.2	6 - 8 inch	No.	\$ 180.00
11.43.3	9 - 10 inch	No.	\$ 350.00
11.44	6 inch dia. Electric school bell 240V 50Hz	No.	\$ 250.00
11.45	<u>Water heater c/w connection with valve, tap, pipe etc.</u>		
11.45.1	15 litres	No.	\$ 200.00
11.45.2	30 litre 2.5 kw 240V	No.	\$ 240.00
11.45.3	25 litres 3 KW 240V	No.	\$ 286.00
11.45.4	50 litres 2.5 KW 240V	No.	\$ 347.00
11.45.5	50 litres 3 KW 240V	No.	\$ 377.00
11.45.6	75 litres 3 KW	No.	\$ 462.00
11.45.7	100 Litres 9 KW	No.	\$ 520.00
11.45.8	120 Litres 11 KW	No.	\$ 850.00
11.46	Instant water heater 3KW, 240V c/w connection with valve, tap, pipe etc.	No.	\$ 350.00
11.47	Door bell with transformer 240V / 4, 8, 12 volt	No.	\$ 120.00
11.48	Door bell with 1.5V battery operation	No.	\$ 110.00
11.49	<u>SON/T street ligthing lantern c/w lamp, IP54, 240V 50Hz, Ignitor, ballast, capacitor etc.</u>		
11.49.1	70W Ditto	No.	\$ 138.00
11.49.2	150W Ditto	No.	\$ 450.00
11.49.3	250W Ditto	No.	\$ 550.00
11.50	90W LED Street lighting weatherproof outdoor type c/w 90W LED Light and driver etc.	No.	\$ 460.00
11.51	<u>Compound lighting globe, IP54 240V 50Hz, c/w lamp, ballast, ignitor</u>		
11.51.1	70W	No.	\$ 480.00
11.51.2	150W	No.	\$ 600.00



Item No.	Description	Unit	Rate
11.52	<u>LED Compound Lighting globe, IP54 c/w E27 bulb holder and LED bulb</u>		
11.52.1	8 inch	No.	\$ 60.00
11.52.2	10 inch	No.	\$ 76.00
11.52.3	12 inch	No.	\$ 100.00
11.52.4	16 inch	No.	\$ 200.00
11.52.5	20 inch	No.	\$ 300.00
11.53	<u>Ducted Exhaust Fan</u>		
11.53.1	Galvanizes steel sheet cabinet in- Line Fan for ducted type exhaust fan c/w necessary duct works to existing duct and connector	No.	\$ 1,500.00
11.54	Stainless Steel bracket for UPVC pipe c/w rod, bolt and nut	Mtr	\$ 450.00
11.55	<u>Solar LED Floodlight fitting c/w accessories</u>		
11.55.1	100W	No.	\$ 110.00
11.55.2	200W	No.	\$ 150.00
11.55.3	300W	No.	\$ 170.00
11.55.4	400W	No.	\$ 190.00
11.55.5	500W	No.	\$ 210.00
11.56	<u>Solar LED Streetlight fitting</u>		
11.56.1	20W	No.	\$ 21.00
11.56.2	40W	No.	\$ 33.00
11.56.3	90W	No.	\$ 40.00
11.56.4	120W	No.	\$ 55.00
11.56.5	200W	No.	\$ 100.00
11.56.6	300W	No.	\$ 130.00
11.56.7	400W	No.	\$ 180.00
11.56.8	Bracket kit / accessories c/w modification	No.	\$ 7.00
11.57	<u>Emergency Light</u>		
11.57.1	LED Self-contained Emergency Light c/w accessories	No.	\$ 170.00
11.57.2	LED Self-contained Twin HeadEmergency Light c/w accessories	No.	\$ 280.00
11.58	<u>Lighting Column</u> To Supply and install hot-dipped galvanized steel octagonal cross section lighting column, flangemounting type base c/w galvanized steel anchor bolts, nuts and necessary accessories. Similar to Lysaght / Galvapole / Ningbo or approved equivalent c/w reinforced concrete foundation which suit to the lighting column		
11.58.1	Height: 4000mm	No.	\$ 570.00
11.58.2	Height: 5000mm	No.	\$ 602.00
11.58.3	Height: 6000mm	No.	\$ 634.00
11.58.4	Height: 8000mm	No.	\$ 831.00
11.58.5	Height: 10000mm	No.	\$ 1,078.00
11.58.6	Height: 12000mm	No.	\$ 1,197.00
11.59	<u>Wall light fittings c/w E14 bulb holder and LED bulb</u>		
11.59.1	1 x 40W	No.	\$ 45.20
11.59.2	1 x 60W	No.	\$ 70.00
11.59.3	2 x 60W	No.	\$ 80.50



Item No.	Description	Unit	Rate
11.60	<u>Wall light fittings c/w E27 bulb holder and LED bulb</u>		
11.60.1	2 x 60W	No.	\$ 93.70
11.60.2	1 x 100W	No.	\$ 97.70
11.60.3	2 x 100W	No.	\$ 117.50
11.60.4	3 x 100W	No.	\$ 120.10
11.61	<u>wall mounted vandal resistant light fitting, UV stabilised impact-resistant, flame-retardant polycarbonate body & lens c/w 70W MH / HPS lamp / 42W TC-T lamp all as per cat nos. LA70MH / LA70S / LA80MV</u>	No.	\$ 291.50
11.62	<u>Electric insect killer fitting c/w light tubes</u>		
11.62.1	2 x 10W	No.	\$ 352.00
11.62.2	2 x 15W	No.	\$ 462.00
11.62.3	2 x 20W	No.	\$ 550.00
11.63	<u>Underwater Light Fitting</u>		
11.63.1	Underwater spot light c/w PAR38 24 V bulb	No.	\$ 308.00
11.63.2	220/240 output 24V 400 VA transformer	No.	\$ 275.00
11.64	Supply, install, testing and commissioning of automatic hand dryer.	No.	\$ 351.00



Item No.	Description	Unit	Rate
12.0	<u>WATER PUMP SYSTEM</u>		
12.1	<u>Supply, install, testing and commissioning of water booster pump c/w motor (efficiency class = IE3 and above), mounting skid, all necessary accessories and connection to service pipe.</u>		
12.1.1	Pump Capacity: 0.75 kW ,Supply Voltage: 230V 50Hz (Single Phase)	No.	\$ 800.00
12.1.2	Pump Capacity: 1.1 kW, Supply Voltage: 230V 50Hz (Single Phase)	No.	\$ 1,000.00
12.2	<u>Supply, install, testing and commissioning of vertical multistage centrifugal water booster pump c/w motor (efficiency class = IE3 and above), mounting skid, all necessary accessories and connection to service pipe.</u>		
12.2.1	Pump Capacity: upto 3 kW Supply Voltage: 400V 50Hz (Three Phase)	No.	\$ 1,300.00
12.2.2	Pump Capacity: from 3 kW upto 4 kW Supply Voltage: 400V 50Hz (Three Phase)	No.	\$ 2,500.00
12.2.3	Pump Capacity: from 4 kW upto 5 kW Supply Voltage: 400V 50Hz (Three Phase)	No.	\$ 3,200.00
12.2.4	Pump Capacity: 30 litre/s @ 9m(H) Supply Voltage: 400V 50Hz (Three Phase)	No.	\$ 10,000.00
12.2.5	Pump Capacity: 13m³/hr @ 40m(H)	No.	\$ 3,000.00
12.2.6	Pump Capacity: 65m³/hr @ 25m(H)	No.	\$ 4,000.00
12.3	<u>Supply, install, testing and commissioning of heavy duty submersible pump c/w motor (efficiency class = IE3 and above) with built-in overload protector, stainless steel and cast iron construction or as offered good brand type, insulation Class F, maximum liquid temperature 50°C, self-cleaning Vortex system impeller, supplied with 10m H07 RNF cable conforming to current regulations, free passage to 20mm solids and all necessary accessories.</u>		
12.3.1	Pump Capacity: 80 litre/min Output Connection: 32 mmØ or to manufacturer's requirements. Supply Voltage: 230V 50Hz (Single Phase) Motor Capacity: 0.3 HP	No.	\$ 2,800.00
12.3.2	Pump Capacity: 120 litre/min Output Connection: 32 mmØ or to manufacturer's requirements. Supply Voltage: 400V 50Hz (Three Phase) Motor Capacity: 1.0 HP	No.	\$ 4,000.00
12.4	<u>Supply, install, testing and commissioning of heavy duty submersible pump, IP68, c/w motor (efficiency class = IE3 and above) with built-in overload protector, stainless steel and cast iron construction or as offered good brand type, insulation Class F, maximum liquid temperature 50°C, self-cleaning Vortex system impeller, supplied with 10m H07 RNF cable conforming to current regulations and all necessary accessories. (for desulding and emptying well works)</u>		
12.4.1	Supply Voltage: 220V 50Hz (Single Phase) Motor Capacity: 1.5 kW / 2.0 HP Speed: 2850 RPM	No.	\$ 5,000.00
12.5	<u>Supply, install, testing and commissioning of pressure tank, working pressure of 10 bar, c/w all necessary accessories and connection to service pipe.</u>		
12.5.1	100 Litres	No.	\$ 850.00
12.5.2	300 Litres	No.	\$ 1,400.00
12.5.3	400 Litres	No.	\$ 1,600.00
12.5.4	500 Litres	No.	\$ 1,929.00
12.5.5	750 Litres	No.	\$ 2,500.00
12.5.6	1000 Litres	No.	\$ 3,500.00
12.6	<u>Supply, install, testing and commissioning of pump control panel c/w Variable Frequency Drive, PLC, soft starters, Ammeter, Voltmeter, selector switches, LED indicating lights and all necessary accessories.</u>		
12.6.1	For 2 Pumps (1 Duty & 1 Standby)	No.	\$ 3,500.00
12.6.2	For 3 Pumps (2 Duty & 1 Standby)	No.	\$ 4,500.00
12.6.3	For 4 Pumps (2 Duty & 2 Standby) / (3 Duty & 1 Standby)	No.	\$ 7,500.00



Item No.	Description	Unit	Rate
	<u>Supply, install, testing and commissioning of the following parts and associated accessories.</u>		
12.7	20 - 25UF pump capacitor	No.	\$ 100.00
12.8	Pump handle	No.	\$ 345.00
12.9	Pump gasket	No.	\$ 345.00
12.10	<u>Bearing / Pillow Block Bearing / Bush Bearing</u>		
12.10.1	upto 25mm ID each	No.	\$ 280.00
12.10.2	upto 38mm ID each.	No.	\$ 280.00
12.10.3	upto 50mm ID each.	No.	\$ 400.00
12.10.4	upto 65mm ID each.	No.	\$ 630.00
12.10.5	upto 75mm ID each.	No.	\$ 745.00
12.11	Re-lathe / re-machine of Bearing Core - both end each.	No.	\$ 403.00
12.12	Re-lathe / re-machine of centre shaft of pump shafting.	No.	\$ 575.00
12.13	<u>Pump mechanical seal</u>		
12.13.1	upto 25mm ID each	No.	\$ 219.00
12.13.2	upto 38mm ID each.	No.	\$ 265.00
12.13.3	upto 50mm ID each.	No.	\$ 334.00
12.13.4	upto 65mm ID each.	No.	\$ 403.00
12.13.5	upto 75mm ID each.	No.	\$ 564.00
12.14	<u>Pump O-Ring</u>		
12.14.1	upto 75mm ID each	No.	\$ 150.00
12.14.2	upto 100mm ID each.	No.	\$ 173.00
12.14.3	upto 150mm ID each.	No.	\$ 219.00
12.14.4	upto 180mm ID each.	No.	\$ 334.00
12.14.5	upto 250mm ID each.	No.	\$ 449.00
12.15	PLC c/w necessary works including programming	No.	\$ 1,000.00
12.16	Pump Pressure controller c/w necessary works	No.	\$ 400.00
12.17	Pump Pressure switch c/w necessary works	No.	\$ 175.00
12.18	Pump Pressure gauge c/w necessary works	No.	\$ 90.00
12.19	Float sensor switch, hanger, weatherproof box c/w connection works	No.	\$ 200.00
12.20	Water level sensor c/w necessary works	No.	\$ 600.00
12.21	<u>Pump coupling set</u>		
12.21.1	upto 32mm OD each.	No.	\$ 173.00
12.21.2	upto 50mm OD each.	No.	\$ 173.00
12.21.3	upto 65mm OD each.	No.	\$ 173.00
12.21.4	upto 80mm OD each.	No.	\$ 288.00
12.22	<u>Rubber bush</u>		
12.22.1	upto 25mm ID each	No.	\$ 100.00
12.22.2	upto 38mm ID each.	No.	\$ 100.00
12.22.3	upto 50mm ID each.	No.	\$ 100.00
12.22.4	upto 65mm ID each.	No.	\$ 100.00
12.22.5	upto 75mm ID each.	No.	\$ 200.00



Item No.	Description	Unit	Rate
12.23	<u>Motor bearing</u>		
12.23.1	upto 25mm ID each.	No.	\$ 200.00
12.23.2	upto 50mm ID each.	No.	\$ 500.00
12.23.3	upto 75mm ID each.	No.	\$ 700.00
12.23.4	upto 100mm ID each.	No.	\$ 900.00
12.24	<u>Soft starter c/w cable connection</u>		
12.24.1	upto 10kW pump's motor	No.	\$ 460.00
12.24.2	upto 20kW pump's motor	No.	\$ 863.00
12.24.3	upto 30kW pump's motor	No.	\$ 1,093.00
12.25	Water pump housing zinc cover	No.	\$ 200.00
12.26	Auto / Manual Selector switch c/w connection works	No.	\$ 100.00
12.27	Water Pump instrumentation c/w revolving light	No.	\$ 1,000.00
12.28	One way valve c/w necessary works required	No.	\$ 230.00
12.29	LED revolving light	No.	\$ 104.00



Item No.	Description	Unit	Rate
13.0	<u>OTHERS</u>		
13.1	<u>To dismantle and remove old fitting transported from site to designated storage area / re-position, re-install back c/w connection and termination as per instructed by S.O</u>		
13.1.1	Floodlight	No.	\$ 80.00
13.1.2	Compound light / street lighting lantern	No.	\$ 130.00
13.1.3	High Bay Fitting	No.	\$ 100.00
13.1.4	Ceiling Fan	No.	\$ 15.00
13.1.5	All Surface / recessed type fluorescent fitting	No.	\$ 20.00
13.1.6	Recessed type downlight	No.	\$ 15.00
13.1.7	Wall fan / Auto fan	No.	\$ 15.00
13.1.8	Exhaust fan / industrial fan	No.	\$ 20.00
13.1.9	Electric School bell	No.	\$ 20.00
13.1.10	Water heater	No.	\$ 50.00
13.1.11	TV antenna	No.	\$ 200.00
13.1.12	Compound / Street lighting pole less than 8m high	No.	\$ 250.00
13.1.13	HDG Street lighting pole more than 8m high (include crane work)	No.	\$ 500.00
13.1.14	Obstruction navigation light.	No.	\$ 350.00
13.1.15	Lightning Protection System	No.	\$ 150.00
13.1.16	Pump	No.	\$ 500.00
13.1.17	Control Panel	No.	\$ 300.00
13.1.18	Pump part and accessories	No.	\$ 300.00
13.1.19	Automatic Hand Dryer	No.	\$ 10.00
13.1.20	Distribution Board	No.	\$ 200.00
13.1.21	Air Circuit Breaker (ACB)	No.	\$ 4,800.00
13.1.22	Residual Current Detection (RCD)	No.	\$ 12.00
13.1.23	Earth Leakage Relay (ELR)	No.	\$ 36.00
13.1.24	Zero Sequence Current Transformer (ZCT)	No.	\$ 72.00
13.1.25	Earth Fault Relay (EFR)	No.	\$ 72.00
13.1.26	Overcurrent Relay (OCR)	No.	\$ 72.00
13.1.27	Digital Power meter	No.	\$ 36.00
13.1.28	Analogue Panel Voltmeter	No.	\$ 72.00
13.1.29	Current Transformer	No.	\$ 72.00
13.1.30	HRC Fuse / Cut-out fuse	No.	\$ 24.00
13.1.31	Contactors	No.	\$ 24.00
13.1.32	By-Pass Switch	No.	\$ 36.00
13.1.33	Selector Switch	No.	\$ 120.00
13.1.34	Photocell / timer	No.	\$ 24.00
13.1.35	LED indicator lamp, holder and cover	No.	\$ 12.00
13.1.36	Switch disconnecter / fuses / accessories	No.	\$ 24.00
13.1.37	Electric insect killer fitting	No.	\$ 10.00
13.2	To make good / tidy up existing electrical / telecom / ict wiring in pvc casing / conduit / flexible conduit	Mtr	\$ 4.00
13.3.	To check, test, troubleshooting, re-align, re-control and re-arrange pump system c/w test relays / contactors / overload relays / float sensors and trace control wiring to function and in normal working order	Lot	\$ 400.00
13.4	To check, test, troubleshooting, rectify pump control panel c/w re-program / re-adjust and minor parts replacement of pump system to function and in normal working order	Lot	\$ 1,000.00
13.5	To provide scaffolding including transportation to site for repair and check light fitting at high ceiling	Lot	\$ 200.00



Item No.	Description	Unit	Rate
13.6	To supply and install wooden block	No.	\$ 15.00
13.7	To supply and make good of lost/defective distribution board cover (des approved)	No.	\$ 300.00
13.8	To check, rectify, troubleshooting that cause tripping such as failure of main or air circuit breaker, c/w insulation test on busbar, riser, sub distribution board and isolated faulty circuit more than 800a c/w clearance, tidy up cable, tighten cable etc	Lot	\$ 800.00
13.9	To check rectify, troubleshoot that cause tripping such as failure of mcb for power point, lighting point and air conditioning point from the existing distribution board (db), sub switchboard up to 600a c/w clearance, tidy up cable, tighten cable etc	Lot	\$ 200.00
13.10	To cut existing ceiling to provide opening for lighting / to close or patch ceiling opening c/w white paint	No.	\$ 5.00
13.11	Checking and servicing of fume cupboard; fume hood, blower including replace any faulty part, rewinding motor and make good to work	No.	\$ 1,000.00
13.12	Disconnect existing, reconnect back using proper jointing kit c/w necessary cable links, excavation etc for 4c/10mm ² - 16mm ² underground cable	PER PT	\$ 280.00
13.13	To test set to pin-pointing of low voltage cable fault location with necessary equipments and services required to carry out test by qualified engineer. Note : 1 fault finding	PER PT	\$ 700.00
13.14	To excavate and expose cable fault location manually or using mechanical excavators, with precautionary measures to be taken to safeguard cable within vicinity of worksite; to supply and provide specialised tools, competent joiner to access the extent of low voltage cable fault and to perform the repair works on the cable; repairing of the low cable fault using suitable repairing kits (crimping cable joint link); backfilling to original formation level on completion of repairing cable fault, liaison with des for test and commissioning	PER PT	\$ 800.00
13.15	To fabricate and bolted to wall aluminium compartment / aluminium louver including latch lock, hinges and all other necessary accessories required	m2	\$ 100.00
13.16	To repaint existing ceiling fan / oscillating fan/ fan wall exhaust fan including spraying anticorrosive paint	No.	\$ 30.00
13.17	To supply and install 610 mm wide x 13 mm thick, rubber floor-mat for switchboard or motor control centre	Mtr	\$ 88.00
13.18	Relocate all the MCBs and RCDs from the existing distribution board to the new distribution board c/w all necessary wiring including testing and commissioning.	No.	\$ 480.00



TERM CONTRACT FOR ELECTRICAL MAINTENANCE WORKS TO SEKOLAH UGAMA (ARAB) MENENGAH PEREMPUAN RAJA ISTERI PENGIRAN ANAK HAJAH SALEHA, KG KATOK AND SEKOLAH ARAB SULTAN HAJI HASSANAL BOLKIAH, KG RIMBA, BRUNEI DARUSSALAM FOR A PERIOD OF TWELVE (12) MONTHS

Only to be participated by contractors who are registered with the Ministry of Development in Category E01.

Tenderers are advised to read the note / specification / scope of works in detail before submitting their prices and shall include all incidental work pertaining thereto even though not specifically mentioned herein or shown or describe in the description and which deem necessary for the works to be carried out.

The quoted price shall include all custom duties, sale tax and other taxes, insurance, transportation and services to complete the works.

We _____ the undersigned Tender / Quote for the above work as follows:

I agree to execute any and all the work up to the maximum value of B\$50,000.00 (Brunei Dollars: Fifty Thousand Only) under the terms of contract at:

+ (PLUS) (_____ %) Percentum

- (MINUS) (_____ %) Percentum

FOR A COMPLETION PERIOD OF 12 MONTHS

Signature of Tenderer & Official Company

Name : _____

Position in Company : _____

Company Name: _____

Address: _____

Contact No : _____

Date: _____

Signature of Witness

Name : _____

Position in Company : _____

Date: _____

Contact No : _____

Company Stamp:



APPENDIX



APPENDIX I

[illegible]

APPENDIX 2



TANDATANGAN PEMBORONG / SIGNATURE OF TENDERER :

TARIKH / DATE :

Date :

SENARAI PERALATAN YANG AKAN DIGUNAKAN UNTUK PEKERJAAN INI (JIKA BERJAYA)*Proposed List of Equipment To Be Used For This Job (If Successful):*

Bil. No.	Jenis Type	Kuantiti Quantity	No. Modal Model No.	Kapasiti Capacity	Remarks

Tandatangan Saksi:*Signature of Witness:***Tarikh:***Date :***Tandatangan Saksi:***Signature of Witness:***Tarikh:***Date :*

SENARAI PEKERJAAN YANG AKAN DI SUB-KONTRAK*Proposed List of Jobs To Be Sub-Contracted:*

Bil. No.	Kerja Works	Kepada To	Remarks

Tandatangan Saksi:*Signature of Witness:***Tarikh:***Date :***Tandatangan Saksi:***Signature of Witness:***Tarikh:***Date :*

SURAT PENGESAHAN

PENENDER/PEMBORONG/KONTRAKTOR/PENGUSAHA/PEMBEKAL
MEMILIKI 'BUSINESS PREMISE' / PREMISE PERNIAGAAN

Nama Syarikat: _____

Alamat Premise Perniagaan: _____

Pos Kod: _____

Telefon Pejabat / Premis Perniagaan: _____

Faks Pejabat / Premis Perniagaan: _____

Telefon Bimbit: _____

BIL.	NAMA PEMILIK SYARIKAT	BIL. KAD PENGENALAN	WARNA	BANGSA

Nama Pengurus: _____

Bil. Kad Pintar: _____ Warna: _____ Telefon: _____

Sukacita memaklumkan bahawa segala keterangan di atas adalah benar.

(_____)

Tarikh: _____

COP SYARIKAT



Rujukan:

Kepada,

Ketua Bahagian Bangunan dan Pemeliharaan

Kementerian Hal Ehwal Ugama

Negara Brunei Darussalam

(U.P : Bahagian Penyelaras Projek (PPP))

Tuan/Puan

PER: Borang Pengakuan Kesanggupan Pembekal

Sukacita membuat pengesahan perakuan yang syarikat saya, _____

Bersetuju untuk membuat pembekalan barang / perkakas / perkhidmatan sebagaimana dalam

Tawaran / sebut harga bilangan : _____

Tarikh: _____

COP SYARIKAT

(_____)
Pemilik Syarikat / CEO / Pengarah

Pengesahan Penerima Jabatan:		
Tarikh Penerima Pebekalan		
(Hendaklah Mengikuti seperti yang telah		
dijanjikan di dalam borang dokuman		
Sebut harga / kebenaran)		

Perhatian:

Borang asal perakuan hendaklah dihantar bersama-sama dengan "Purchase Order"(P.O) and invoice

Arahan:

Borang yang siap disikan oleh pembekal yang diluluskan hendaklah disertakan bersama-sama dengan

"Purchase Order"(P.O) dan invoice apabila tuntutan penyelesaian pembayaran dibuat.

