



FONDAZZJONI GĦALL-
**PATRIMONJU KULTURALI
TAL-ARĊIDJOĊESI TA' MALTA**

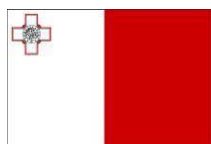
REFERENCE NUMBER: PA.5.0103/17.1

Tender for the Installation of a Reversible Metal Frame Structure to support Archival Storage Shelves, Internal Alterations and Finishes, Mechanical & Electrical works, and supply of Furniture & Fixtures for the Archives of the Archdiocese of Malta, Floriana.

Date Published: 09th April 2021

Deadline for Submission: 14th May 2021 at 09:30am CEST

Tender Opening: 18th May 2021 At 10:00am CEST



Operational Programme I – European Structural and Investment Funds 2014-2020 –

"Fostering a competitive and sustainable economy to meet our challenges"

Project part-financed by the European Regional Development Fund
Co-financing rate: 80% European Union; 20% National Funds



Bid Bond requirements for this tender: Not Applicable

Fondazzjoni għall-Patrimonju Kulturali ta' l-Arcidiocesi ta' Malta

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## SECTION 1 - INSTRUCTIONS TO TENDERERS

### 1. General Instructions

1. In submitting a tender, the tenderer accepts in full and in its entirety, the content of this tender document, including subsequent Clarifications issued by the Non Governmental Organisation (NGO), whatever the economic operator's own corresponding conditions may be, which through the submission of the tender is waived. Tenderers are expected to examine carefully and comply with all instructions, forms, contract provisions and specifications contained in this tender document. These Instructions to Tenderers complement the General Rules Governing Tenders for NGOs Version 1.0.

**No account can be taken of any reservation in the tender in respect of the procurement documents; any disagreement, contradiction, alteration or deviation shall lead to the tender offer not being considered any further.**

**Prospective tenderers must submit their offer by depositing it in the tender box, located at Fondazzjoni għall-Patrimonju Kulturali ta' l-Arcidiocesi ta' Malta, Archbishop's Curia, St Calcedonius Square, Floriana FRN 1535 MALTA. Any references in the tender document or tender forms to uploading of tender documentation and forms is to be ignored. Tenderers must submit one original tender offer as well as a soft copy on a USB (soft copies of the tender offers submitted on CD are strictly not acceptable). Furthermore in the soft copy of the tender offer, Tenderers must submit the Bill of Quantities duly filled in, in excel format apart from a scanned copy of the filled in Bill of Quantities. It is important that the full tender bid package is provided in soft copy given that due to Covid 19 pandemic, utilisation of the soft copy will be highly required throughout the evaluation process. Tender reference number and tender title must be clearly indicated on the sealed bid. Prospective tenderers take full responsible to submit their offer by the set tender submission deadline.**

**Note:**

**Where in this tender document a standard is quoted, it is to be understood that the Contracting Authority will accept equivalent standards. However, it will be the responsibility of the respective bidders to prove that the standards they quoted are equivalent to the standards requested by the Contracting Authority.**

- 1.2 The subject of this tender is the installation of a metal frame structure to support Archival Storage Shelves on two levels, internal alterations and finishes (including masonry works, painting & finishing works, installation of flooring, gypsum partitions, fire doors etc), installation of mechanical & electrical works, and supply of furniture & fixtures for the Archives of the Archdiocese of Malta, Floriana.
- 1.3 The place of acceptance of the works shall be the Archdiocese of Malta, Pjazza Kalcidonju, Floriana, the time-limits for the execution of the entire contract shall be 40 weeks from the Order to Start Works, and the INCOTERM<sup>2010</sup> applicable shall be **Delivery Duty Paid (DDP)**.
- 1.4 The Estimated Procurement Value for this Call for Tenders has been based on comprehensive research including appropriate financial analysis. In the context of this procurement, the Estimated Procurement Value, based on market research, is that of €265,000 excluding VAT. This estimate includes the maintenance items listed in the Bill of Quantities.

The purpose of this value shall be the guidance of prospective bidders when submitting their offer and is not to be considered as a binding capping price.

Therefore, the published Estimated Procurement Value is not restrictive and final on the Contracting Authority. Economic Operators are free to submit financial offers above or below the Estimated Procurement Value. **However**, the Contracting Authority reserves the right to accept or reject Financial Offers exceeding the Estimated Procurement Value

- 1.5 This is a bill of quantities contract.
- 1.6 This call for tenders is being issued under an open procedure.
- 1.7 The beneficiary of this tender is **Fondazzjoni għall-Patrimonju Kulturali ta' l-Arcidiocesi ta' Malta**.
- 1.8 This tender is not a reserved contract.

## 2. Timetable

|                                                                                                                                                                                                                                                                                                                                                                      | DATE                        | TIME        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------|
| Clarification Meeting/Site Visit (Refer to Clause 6.1)                                                                                                                                                                                                                                                                                                               | 16 <sup>th</sup> April 2021 | 10.00 CEST* |
| <p>Deadline for request for any additional information from the NGO</p> <p>Clarification requests should be addressed to: <i>NGOs e-mail address</i><br/> <a href="mailto:fond.pkam@gmail.com">fond.pkam@gmail.com</a></p>                                                                                                                                           | 28 <sup>th</sup> April 2021 | 17.00 CEST  |
| Last date on which additional information can be issued by the NGO                                                                                                                                                                                                                                                                                                   | 7 <sup>th</sup> May 2021    | 20.00 CEST  |
| Deadline for submission of tenders<br>(unless otherwise modified in terms of Clause 10.1 of the General Rules Governing Tendering for NGOs)                                                                                                                                                                                                                          | 14 <sup>th</sup> May 2021   | 09.30 CEST  |
| <p>Tender Opening</p> <p>Due to the Covid-19 Pandemic tender opening session will take place 18/04/2021 and general public will not be allowed to attend physically. Tenderers are to leave their email address when submitting the tender and a TEAMS invitation will be sent to the bidders to connect should they wish to witness the tender opening session.</p> | 18 <sup>th</sup> May 2021   | 10.00 CEST  |
| * All times Central European Time (CET) / Central European Summer Time (CEST) as applicable                                                                                                                                                                                                                                                                          |                             |             |

\*The clarification meeting will be held online. Thus persons wishing to participate in the clarification meeting must send their request to participate by email on [fond.pkam@gmail.com](mailto:fond.pkam@gmail.com) by 15<sup>th</sup> April 14.00 CEST.

## 3. Lots

- 3.1 This tender is not divided into lots, and tenders must be for the whole of quantities indicated. Tenders will not be accepted for incomplete quantities.

#### **4. Variant Solutions**

- 4.1 Variant solutions are not permissible.

#### **5. Financing**

- 5.1 The project is *co-financed* by the European Union, in accordance with the rules of *Operational Programme I - European Structural and Investment Funds 2014-2020* programme
- 5.2 The Contracting Authority of this tender is **Fondazzjoni għall-Patrimonju Kulturali ta' l-Arcidiocesi ta' Malta**.

#### **6. Clarification Meeting/Site Visit/Workshop**

- 6.1 A clarification online meeting will be held on the date and time indicated in Clause 2, to answer any questions on the tender document which have been forwarded in writing, or are raised during the same meeting. Minutes will be taken during the meeting, and these (together with any clarifications in response to written requests which are not addressed during the meeting) shall be posted online on the NGOs website as a clarification note as per of the General Rules Governing Tendering for NGOs.

Meetings between economic operators and the NGO, other than that provided in this clause during the tendering period are not permitted.

#### **7. Selection and Award Requirements**

In order to be considered eligible for the award of the contract, economic operators must provide evidence that they meet or exceed certain minimum criteria described hereunder.

##### **(A) Eligibility Criteria**

Economic Operators are to complete the Eligibility Section through the ESPD and the necessary documents as follows: (Note 2)

- (i) No Bid Bond is required.
- (ii) Declare agreement, conformity and compliance with the General Rules Governing Tenders for NGOs. <sup>(Note 2A)</sup>
- (iii) Declare agreement, conformity and compliance with the provisions of the Statement on Conditions of Employment by completing and submitting the form with title Statement on Conditions of Employment. <sup>(Note 2A)</sup>
- (iv) Power of Attorney (if applicable) <sup>(Note 2A)</sup>
- (v) Data on Joint Venture/Consortium (where applicable) <sup>(Note 2A)</sup>
- (vi) Submission of the declaration form that stipulates that following signature of contract, the successful bidder, will provide evidence in respect of the requirements stipulated regarding Energy Efficiency through the Energy Efficiency Form (if applicable) <sup>(Note 2A)</sup> Applicable.

**(B) Exclusion (including Blacklisting) and Selection Criteria - information to be submitted through the completion of the following declaration forms:**

The Exclusion (including Blacklisting) criteria are to be completed by the Economic Operator in the ESPD (Tender response format) under Part III titled 'Exclusion Grounds' which includes the following:

- A. Grounds relating to Criminal Convictions
- B. Grounds relating to the payment of taxes or social security contributions
- C. Ground relating to insolvency, conflicts of interests or professional misconduct
- D. Purely national exclusion grounds

- (i) Declaration concerning exclusion grounds
- (ii) Declaration concerning *Selection Criteria*

**Information to be submitted through the European Single Procurement Document (ESPD).**  
(Note 2A)

- (a) Data Concerning the economic operator to be submitted by filling Part II of the European Single Procurement Document (ESPD). Part II (2A.1 till 2A.13.1) of the ESPD seeks background information about the economic operator.
- (b) Part II A Reference 2A.14 till 2A.16.6 need only be filled in if the procurement is Reserved. (Note 2A) (Not applicable for this tender)
- (c) Part II A Reference 2A.17 till 2A.17.3 need only be filled in when the economic operator is part of a group, consortium, joint venture or similar. Furthermore in the case of a Joint Venture/Consortium or group of economic operators the tender must include a preliminary agreement or letter of intent stating that all partners assume joint and several liability for the execution of the contract, that the lead partner is authorised to bind, and receive instructions for and on behalf of, all partners, individually and collectively. (Note 2A)
- (d) Part II A Reference 2A.18 need only be filled where the tender is divided into lots. (Note 2A) (Not applicable for this tender)
- (e) Data concerning exclusion grounds to be submitted by filling Part III of the European Single Procurement Document (ESPD). (Note 2A)
- (f) Economic Operators must declare that they meet the minimum criteria established hereunder by filling Part IV of the European Single Procurement Document (ESPD). If no Selection Criteria is requested by the Contracting Authority, the relevant part of the ESPD is to be left blank.  
(Note 2A)

**(g) Technical and Professional Ability** <sup>(Note 2A)</sup>

**i) Technical facilities and measures for ensuring quality:**

The Economic operator shall provide details of relevant tools, vehicles, plant or technical equipment available in relation to this procurement exercise. The bidder shall provide details of the facilities available to undertake steel work, erection, fabrication and welding including details of the fabrication facilities and plant. This information shall be included in the Selection Criteria Declaration Form in Question Reference number 9 under the Technical and Professional Ability Section. <sup>(Note 2A)</sup>

**ii) Subcontracting Proportion:**

The Economic operator is to provide data concerning subcontractors and the percentage of works to be subcontracted through the information included in the ESPD. <sup>(Note 2A)</sup>

Any subcontractor proposed must fill in the ESPD. Any subcontractor proposed and disclosed at this stage shall be evaluated in line with the Exclusion and Blacklisting Criteria as per these Instructions to Tenderers. Furthermore, if the subcontractor is relied upon by the bidder to meet the standards established in the selection criteria, such reliance will be evaluated to verify its correctness and whether in effect these criteria are satisfied.

It is being understood that if the information being requested regarding sub-contracting is left empty, it will be assumed that no sub-contracting will take place (0% subcontracting).

**(h) Quality Assurance Schemes and Environmental Management Standards** <sup>(Note 2A)</sup>

**i) QA Procedures and Welder Certification**

The bidder is to confirm that he has in place the specified steel works procedures and welder certification, specifically:

- 1G, 2G, 3G and 4G welding procedures
- Environmental control to ensure integrity of welding
- Welder certification and testing

The bidder is to further confirm that if awarded the contract, and upon award of contract, he shall provide a copy of the above procedures and welder certificates in accordance with the specifications and within the timeframe stipulated in the Special Conditions.

This information shall be included in the Selection Criteria Declaration Form in Question Reference number 12 under the Technical and Professional Ability Section. <sup>(Note 2A)</sup>

**ii) Certifications by independent bodies about quality assurance standards:**

The bidder is to confirm that if awarded the contract, and upon award of the contract, all certificates drawn up by independent bodies attesting that the economic operator complies with the required quality assurance plan as listed in the specifications shall be submitted.

*The chosen bidder shall nominate an Independent Quality Assurance company/companies which will certify the quality of materials and works produces by the contractor and sub-contractors.*

*The Independent QA company/companies will carry out all the necessary inspections and tests as stipulated in the tender specifications.*

*It is the Economic Operator's responsibility to ensure that the correct information is reflected in the ESPD tender response format for the above criteria.*

**(C) Technical Specifications**

- (i) Tenderer's Technical Offer in response to specifications. <sup>(Note 3)</sup>

**A. Key Experts Form** accompanied by CVs of Key experts, copies of qualifications' certifications including warrants, the Statement of Exclusivity and Availability Form, the Self-declaration form for Key Experts (relating to public employees - if applicable) and all other documentation as requested. <sup>(Note 2A)</sup>

The following Key Experts are required:

- a) Key Expert 1: Perit who will assume all the responsibility in terms of the legal obligations as arising under Maltese law (Warrant Nos to be provided);
- b) Key Expert 2: Mechanical Engineer (Warrant Nos to be provided);
- c) Key Expert 3: Electrical Engineer (Warrant Nos to be provided);
- d) Key Expert 4: Licenced Stone Mason;
- e) Key Expert 5: Project Manager (MQF Level 4 in a related area of study);
- f) Key Expert 6: Accredited Health & Safety Officer;
- g) Key Expert 7: Electrician holding an Autohisation B- Three Phase Licence (Licence Number to be declared); and
- h) Key Expert 8: Welding & Fabrication designer (MQF level 4 in Welding & Fabrication or equivalent).

**B. Tenderer's Technical Offer** which shall consist of: <sup>(Note 3)</sup>

- i) Declaration Form signed by the bidder as included in the Works Tenderer Technical Questionnaire<sup>(Note 3)</sup>. **(Note: Submission of an unsigned declaration form or a modified declaration form will automatically invalidate the tender bid).**
- j) A Detailed Method Statement explaining the processes being proposed to execute the different works proposed. This document must clearly illustrate how the tenderer expects to achieve the requirements set out in the tender specifications. <sup>(Note 3)</sup>
- k) A Construction Management Plan which shall include a detailed site logistics and plant locations clearly outlining hoarding, site storage, the use of machinery and equipment, the human resources that the tenderer envisages to deploy for the completion of the works, and shall take into account the problems of access into the site. The plan may include drawings or sketches illustrating site dynamics and logistics. <sup>(Note 3)</sup>
- l) A Risk Assessment. <sup>(Note 3)</sup>
- m) A Gantt Chart Programme of Works as outlined in the Works Tenderer Technical Questionnaire. The implementation period for this tender is 40 weeks from order to start works. <sup>(Note 3)</sup>

- (ii) **Literature** as per Form marked 'Literature List' to be submitted with the Technical offer at tendering stage.

**No changes to the information provided in the Literature submitted will be allowed. Literature submitted shall be rectifiable only in respect of any missing documents.** <sup>(Note 2B)</sup>

- (iii) Samples as per section in Form marked 'Sample List' may be requested during the evaluation



stage to supplement the technical offer submitted. If requested, the Samples must be submitted within 10 working days of being notified to do so. <sup>(Note 3)</sup> **Not applicable for this tender**

#### (D) Financial Offer

- (i) The Tender Form and Tenderer's Declaration are to be completed and submitted with the offer; <sup>(Note 3)</sup>
- (ii) A financial offer is to be submitted by filling in the **Bill of Quantities**, and is to be calculated on the basis of **Delivered Duty Paid (DDP)<sup>2020</sup> (Grand Total)** for the **works** tendered. <sup>(Note 3)</sup>

#### Notes to Clause 7:

1. Tenderers will be requested to clarify/rectify, within five (5) working days from notification, the tender guarantee only in the following four circumstances: incorrect validity date, and/or incorrect value, and/or incorrect addressee and incorrect name of the bidder. Rectification in respect of the Tender Guarantee (Bid Bond) is free of charge.

2. A) Tenderers will be requested to either clarify/rectify any incorrect and/or incomplete documentation, and/or submit any missing documents within five (5) working days from notification.

B) Tenderers will be requested to rectify/submit only missing documents within five (5) working days from notification. No changes to the information provided in the Literature submitted will be allowed. Literature submitted shall be rectifiable only in respect of any missing information. All Rectifications are free of charge.

3. No rectification shall be allowed. Only clarifications on the submitted information may be requested.

Request for Clarification and /or rectifications concerning a previous request dealing with the same shortcoming shall not be entertained.

#### **8. Tender Guarantee (Bid bond)**

8. No tender guarantee (bid bond) is required.

1

#### **9. Criteria for Award**

9. The sole award criterion will be the price. The contract will be awarded to the tenderer submitting the cheapest priced offer satisfying the administrative and technical criteria.

1

## SECTION 2 - EXTRACTS FROM THE PUBLIC PROCUREMENT REGULATIONS

### Part X of the Public Procurement Regulations

270. Any tenderer or candidate concerned, or any person, having or having had an interest or who has been harmed or risks being harmed by an alleged infringement or by any decision taken including a proposed award in obtaining a contract, a rejection of a tender or a cancellation of a call for tender after the lapse of the publication period, may file an appeal by means of an objection before the Review Board, which shall contain in a very clear manner the reasons for their complaints.

271. The objection shall be filed within ten calendar days following the date on which the NGO has by fax or other electronic means sent its proposed award decision or the rejection of a tender or the cancellation of the call for tenders after the lapse of the publication period.

272. The communication to each tenderer or candidate concerned of the proposed award or of the cancellation of the call for tenders shall be accompanied by a summary of the relevant reasons relating to the rejection of the tender as set out in regulation 242 or the reasons why the call for tenders is being cancelled after the lapse of the publication period, and by a precise statement of the exact standstill period.

273. The objection shall only be valid if accompanied by a deposit equivalent to 0.50 per cent of the estimated value set by the NGO of the whole tender or if the tender is divided into lots according to the estimated value of the tender set by the NGO for each lot submitted by the tenderer, provided that in no case shall the deposit be less than four hundred euro (€400) or more than fifty thousand euro (€50,000) which may be refunded as the Public Contracts Review Board may decide in its decision.

274. The Secretary of the Review Board shall immediately notify the Director and/or the NGO as the case may be that an objection had been filed with his authority thereby immediately suspending the award procedure.

275. The NGO involved, as the case may be, shall be precluded from concluding the contract during the period of ten calendar days allowed for the submission of appeals. The award process shall be completely suspended if an appeal is eventually submitted.

276. The procedure to be followed in submitting and determining appeals as well as the conditions under which such appeals may be filed shall be the following:

- (a) any decision by the General Contracts Committee or the Special Contracts Committee or by the NGO shall be made public by affixing it to the notice-board of the same NGO as the case may be or by uploading it on Government's e-procurement platform prior to the award of the contract if the call for tenders is administered by the NGO;
- (b) the appeal of the complainant shall also be affixed to the notice-board of the Review Board and shall be communicated by fax or by other electronic means to all participating tenderers;
- (c) the NGO and any interested party may, within ten calendar days from the day on which the appeal is affixed to the notice-board of the NGO and uploaded where applicable on the Government's e-procurement platform, file a written reply to the appeal. These replies shall also be affixed to the notice-board of the Review Board and where applicable it shall also be uploaded on the Government's e-procurement platform;

- (d) within three working days of the publication of the replies, the Secretary of the Review Board shall prepare a report (the Analysis Report) analysing the appeal and any reply to it. This report shall be circulated to the persons who file an appeal and to all parties who submitted a reply to the appeal;
- (e) after the preparatory process is duly completed, the Director or the Head of the NGO shall forward to the Chairman of the Review Board all documentation pertaining to the call for tenders in question including files, tenders submitted, copies of deposit receipts and any motivated letter;
- (f) The secretary of the board shall inform all the participants of the call for tenders, the NGO of the date or dates as the case maybe when the appeal will be heard;
- (g) When the oral hearing is concluded, the Public Contracts Review Board, if it does not deliver the decision on the same day, shall reserve decision for the earliest possible date to be fixed for the purpose, but not later than six weeks from the day of the oral hearing:  
Provided that for serious and justified reasons expressed in writing by means of an order notified to all the parties, the Public Contracts Review board may postpone the judgment for a later period.
- (h) The secretary of the board shall keep a record of the grounds of each adjournment and of everything done in each sitting;
- (i) After evaluating all the evidence and after considering all submissions put forward by the parties, the Review Board shall decide whether to accede or reject the appeal.

## SECTION 3 - SPECIAL CONDITIONS

These conditions amplify and supplement, if necessary, the General Conditions governing the contract. Unless the Special Conditions provide otherwise, those General Conditions remain fully applicable. The numbering of the Articles of the Special Conditions is not consecutive but follows the numbering of the Articles of the General Conditions. Other Special Conditions should be indicated afterwards.

For the purposes of contracts issued by NGOs, the term 'approval from the Central Government Authority' shall be substituted by the term 'approval by the Head responsible for that NGO'; Furthermore, any references to the Contracting Authority throughout the General Conditions shall be deemed to be referring to the NGO responsible for that procurement.

### Article 2: Law and language of the Contract

2.1 The Laws of Malta shall apply in all matters not covered by the provisions of the contract.

2.2 The language used shall be English.

### Article 3: Order of Precedence of Contract Documents

The contract is made up of the following documents, in order of precedence:

- (a) the Contract;
- (b) the Special Conditions;
- (c) the General Conditions;
- (d) the Contracting Authority's technical specifications and design documentation;
- (e) the Contractor's technical offer, and the design documentation (drawings);
- (f) the bill of quantities/financial bid (after arithmetical corrections)/breakdown;
- (g) the tender declarations in the Tender Response Format;
- (h) any other documents forming part of the contract.

Addenda have the order of precedence of the document they are modifying.

### Article 4: Communications

Further to the contents in the General Conditions, the communication details of the Contracting Authority are:

Fondazzjoni għall-Patrimonju Kulturali ta' l-Arcidiocesi ta' Malta  
The Archbishop's Curia, Saint Calcedonious Square, Floriana  
FRN 1535  
Tel: 2590 6400  
Email Address: fond.pkam@gmail.com

Communications between the Contracting Authority and/or the Supervisor on one hand, and the Contractor on the other, shall be exclusively in writing and in the English language. Specific and standard procedures of communication (templates of request for information, contract submittal, site instructions, time of communication and for replies, frequency of meetings) shall be agreed among the Contracting Authority and the winning bidder within fifteen (15) days from the Commencement Date of the Contract, unless otherwise specified in these Special Conditions and in Section 4 - Technical Specifications.

## **Article 5: Supervisor and Supervisor's Representative**

- 5.6** The Contractor shall be responsible to provide all access necessary for verifying and inspecting the works carried out and the items being provided

## **Article 6: Assignment**

Requests from the contractor for a change in assignment will not be allowed except in the case of force majeure which results in the Contractor being unable to carry out the tasks assigned in the contract.

## **Article 8: Supply of Documents**

- 8.4** Any documents and drawings prepared by the Contractor are to be submitted for approval to the Contracting Authority and the Supervisor, the procedure being agreed to between the parties as indicated in Clause 4 of the Special Conditions.

## **Article 9: Access to Site**

- 9.1** In addition to sub clause 9.1 of the General Conditions, contractors may be required to suspend all or part of the works being carried out in order not to disturb any official function or activity held as indicated by the Contracting Authority. The contractor will be notified of such suspension of works at least 48 hours in advance and will not be eligible for compensation, apart from an extension of time.
- 9.5** The contractor is to note that access to the public/private buildings shall be maintained at all times and shall maintain pedestrian and vehicular access (where applicable) at all times.
- To this effect, the contractor and his employees shall be required to abide by the instructions issued from time to time by personnel responsible for the security of the underlying/adjoining properties and shall ensure that all works are carried out without jeopardizing the security of the place.

## **Article 10: Assistance with Local Regulations**

- 10.3** The contractor is responsible for complying with local regulations at his expense to ensure the project is compliant with all the relevant local regulations.

## **Article 11: The Contractor's Obligations**

- 11.9** As per article 15.4 of the Special Conditions
- 11.11** Further to what is stated in the General Conditions, the requirements for Contractor's drawings are detailed in Section 4 Technical Specifications of this Tender. The Contractor shall also submit to the Supervisor all documents listed in the table below within three weeks from the date of Signature of the Contract or the date of the Letter of Intent by the Contracting Authority, whichever is the earlier:
- Important Note: All of the hereunder documentation is to be clearly labelled (with applicable Revision Numbers and Revision dates) and duly bound. The Contractor shall also keep a list showing all the revisions of the hereunder documentation.

| Ref | Description                                                                                                                                                                  | Technical Specifications: Section 4 | To be endorsed by |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------|
| 1   | Performance Programme - Refer to Art. 15                                                                                                                                     |                                     | Key Expert 1 & 5  |
| 2   | Contractor's Quality Plan (CQP), including procedures for steel works, (including welding), quality control of steel works (including welding) and certification of welders. |                                     | Key Expert 1 & 5  |
| 3   | Method Statements for all permanent works plus corresponding risk assessments and mitigation measures to prevent or minimize health & safety.                                |                                     | Key Expert 1 & 6  |
| 4   | Health and Safety Plan                                                                                                                                                       |                                     | Key Expert 6      |
| 4   | Detailed structural and workshop drawings for the metal frame structure (including details of finishing, flooring, railings, staircase, etc. )                               |                                     | Key Expert 1      |
|     |                                                                                                                                                                              |                                     |                   |
|     |                                                                                                                                                                              |                                     |                   |

The Supervisor will comment on and where appropriate approve these documents. The supervisor may request amendments or rectifications and the Contractor shall ensure that the respective documents are updated accordingly within three days or any other time period instructed by the Supervisor. In the event that the Contractor fails to satisfactorily provide any of these documents on time, the Supervisor may not allow all or the affected works to commence or progress and the Contractor shall be in default and shall be liable for the consequences for any resulting delay and to the relevant administrative penalties stipulated in Article 68 of these Special Conditions.

The Contractor shall be bound to adhere to and update as necessary (with the approval of the Supervisor) these documents during the execution of the contract. However, the abovementioned approval will in no way alleviate the Contractor of his responsibilities.

Any delay to commence or progress with works caused by the Contractor's failure to provide, develop and update any of these documents to the satisfaction of the Supervisor and approving Authorities shall be at the Contractor's risk.

11.14

The Contractor, including all the subcontractors, has to comply with all the legislation and regulations concerning employment in Malta, especially the posting of Workers in Malta Regulations; and must liaise with the Department of Industrial and Employment Relations, Malta - DIER and Employment & Training Corporation - ETC, to notify about such workers, fill in the appropriate forms and submit the required documentation; and must provide copies of such notification forms to the Contracting Authority.

11.17

The Contracting Authority and the Supervisor shall make available the tender drawings (and any subsequent revisions to such drawings) to the Contractor at the latter's request and well as any drawings required to carry out the works as

the need arises. Any such drawings will remain the property of the Contracting Authority and the Contractor may not reproduce or communicate them to third parties except with the Contracting Authority's agreement.

**11.20** Further to Article 11.2 in the General Conditions, the contractor shall deploy the necessary resources so as to maintain a good progress of work on the site and shall also, where necessary, undertake to perform works outside normal working hours, and on public holidays and weekends at no additional cost to the Contracting Authority, so as to ensure the completion of the Works within the required time-frame, in accordance with the Technical Requirements and with the Period of Execution.

**11.21** The Contractor shall submit working and shop drawings, installation drawings, technical data, as-built drawings and other required information to the Supervisor when so requested and within the timeframes requested by the Supervisor. The Supervisor may liaise with the Consultant to approve or otherwise. In the case of technical information and data, the contractor shall allow a minimum of ten (10) days for the Supervisor to comment. In the case of shop drawings, the Contractor shall submit these for the comment of the Supervisor at least five (5) days before the relevant work is due to commence. The Supervisor may request any drawing and any other document submitted by the Contractor to be revised or replaced and the Contractor shall so revise or replace the document within the requested timeframe and at the Contractor's own expense.

The Contractor shall draw-up and submit all other documentation required as stipulated elsewhere in these Special Conditions, as specified in the Technical Specifications and as otherwise instructed by the Supervisor within the stipulated, specified or requested time frames.

The Contractor shall prepare his drawings and propose any detailing to the Contract drawings as issued by the Contracting Authority for the Supervisor's consideration within 7 (seven) days from the date of receipt of the documents in Article 8. The Supervisor shall, after due consultation with the Contracting Authority, approve the modifications or otherwise to the Contractor within 7 (seven) days from submission to the Supervisor. Once all documents have been submitted to the Contractor and any proposed modifications approved or otherwise, the Contractor shall prepare detailed shop and construction drawings as per Article 17 (Contractor's drawings) for all the works as agreed with the Supervisor. The shop and construction drawings shall include all necessary details conditions and according to the instructions of the Supervisor. The Contractor shall provide these drawings to the Supervisor within the inception period defined in Article 32 (Period of execution of tasks (Performance) of these Special Conditions and when instructed by administrative orders of Supervisor. Contractor must allow for a period of seven (7) working days in his Programme of Works for the Supervisor to review the Contractor's drawings. The Supervisor shall not issue the administrative order in Clause 15.7 or allow Contractor to commence fabrication of works before the approval of all the construction/shop drawings by the Supervisor and the Contracting Authority. If the Contractor fails to submit the construction/shop drawings within the timeframes instructed by the Supervisor and according to the contract conditions, the Contractor shall incur the penalties established in the contract under Article 68 of these Special Conditions.

**11.22** The Contractor shall be obliged to follow any and all instructions issued by the Supervisor in relation to the Works in so far as these fall within the overall scope of the Contract.

**11.23** The Contractor shall be obliged to ensure avoidance of disruption and inconvenience to the day to day business on and around the site, including the co-ordination with other contractors that may be engaged on or in the vicinity

of the site, the free movement of traffic and pedestrians, except where this is absolutely unavoidable. In particular, the Contractor shall take all such precautions as may become necessary so as to avoid causing any damage to adjacent buildings or property, including public spaces, during the execution of the Works.

- 11.24** The Contractor shall also, in addition to the above, take any necessary action to ensure and maintain the health and safety of his employees, together with those of the employees of any other contractor engaged on or in the vicinity of the site, together with the general public and shall follow any relevant instructions and /or recommendations of the contractor's Health and Safety Offices and the Contracting Authority Project Supervisor to fulfil the obligations set out in the Legal Notice 281/2004 (SL 424.29)
- 11.25** In addition to other obligations arising under the Contract pertinent to the execution of the Works, the Contractor shall, following completion of same, fulfill all obligations during the Defects Liability Period as outlined in Article 58.6 of these Special conditions.
- 11.26** The Contractor shall not dismantle the scaffolding prior to the approval of the Contracting Authority's architect and civil engineer in charge. The contractor shall give the Contracting Authority's architect and civil engineer in charge at least one week notice to allow for a final inspection and the measurement of works
- 11.27 Quality Assurance & Control System**  
In accordance with the time frame stipulated in Art. 11.11, the Contractor, through its Independent Inspection and Testing service provider, shall submit to the Supervisor a detailed Quality Assurance & Control Plan. The Supervisor may request amendments to the plan and the Contractor shall ensure that it is amended accordingly. The Contractor shall ensure that the plan is adhered to at all times during the execution of the Contract. The Contractor shall engage a suitably qualified person or entity and laboratory and NTD testing service to be entrusted with the quality assurance and control activities during the execution of the works.
- 11.28** A suitable "housekeeping" programme shall be established before commencement of the project, and be continuously implemented on the Site.
- 11.29** The Contractor will be available to attend regular site, management and progress meetings.
- 11.30** The contractor binds himself to adhere to the conditions imposed in the Planning Permit, that is, the approved drawings, document and conditions imposed in Planning Permit PA NO/6233/19 as approved by the Planning Authority. He also binds himself to follow all instructions given to him by the Superintendence of Cultural Heritage.

### Article 13: Performance Guarantee

**13.1** The Contractor shall, within 15 calendar days of receipt of the contract, sign and date the contract and return it together with an original copy of the Performance Guarantee to the Contracting Authority. The amount of the guarantee shall be 4% where the amount of the total contract value is between €10,000 and €500,000 exclusive of VAT. If the same Contractor has more than one contract with the Contracting Authority, then the Contractor will be allowed to submit a single bid bond in accordance with the schedule stipulated in



the Tender Form.

13.3 The performance guarantee shall be in the format given in Section 5 and shall be provided in the form of a bank guarantee. It shall be issued by a bank in accordance with the eligibility criteria applicable for the award of the contract.

Furthermore, the Contracting Authority will not affect any payment to the Contractor until the performance guarantee has been submitted.

13.8 The performance guarantee shall be released within 30 days of the signing of the Provisional Acceptance Certificate including any snag lists.

#### **Article 14: Insurance**

14.1.a Without any prejudice to Article 14.1 a, b, c of the General Conditions, the contractor is required to insure for the whole duration of the contract against risk of damage to the historic fabric of the building being restored through this contract for the amount of €235,000 per accident with the number of occurrences unlimited.

14.2 Without any prejudice to 14.1 a, b, c of the General Conditions, the contractor is required to insure for the whole duration of the contract for the amount of €1,500,000 per accident with the number of occurrences unlimited against each party's liability for any loss, damage, death or bodily harm, that may be caused to third parties, or to any person that is authorized to be on site at any given time, or any damages to property belonging to third parties, including loss of profits that may be sustained by third parties.

14.3 Amount per personal injury and unlimited occurrences as specified in Article 14.2 of the Special Conditions.

#### **Article 15: Performance Programme (Timetable)**

15.1 The Contractor shall provide a detailed Programme of Works.

15.4 The Programme of Works shall be updated monthly or whenever required by the Supervisor, to be in line with the progress of the actual Works. The Programme of Works shall be accompanied by sufficient data and information together with all the necessary details of constructional plant, required labour force, etc. The Supervisor shall approve the Programme of Works within ten (10) working days from submission by the Contractor to the Supervisor. Should the Supervisor consider any alteration in or addition to the Programme of Works as submitted, the Contractor shall conform therewith without additional cost. Any changes to the Programme of Works shall be approved by the Contracting Authority.

#### **Article 17: Contractor's Drawings/Diagrams**

17.1 The Contractor shall submit to the Supervisor for approval any drawings, documents, programme of works, technical literature, samples and /or models that the Supervisor may reasonably require for the performance of the contract within 5 working days from written request by the Supervisor or from date when meeting where minutes are taken.

17.7 Further to the provisions of Article 17.7 of the General Conditions, the Contractor must submit a full set of the final drawings upon completion of the project and must do so within 50 days from issuing of the Partial Provisional Acceptance Certificate. Failure to do so will result in a daily penalty of fifty (50) euro up to a maximum of 5% of the contract value.

#### **Article 18: Tender Prices**

18.2 The contractor will ascertain that all the respective rates have included double handling, carting away and dumping fees

18.3 The Contractor shall be deemed to have taken into account in his tender price all works, fees and costs that are necessary to complete the project and to fully hand over in operational condition.

#### **Article 19: Exceptional Risks**

19.5 Further to the provisions of Article 19.5 of the General Conditions, if the Contractor is granted an extension of time in the implementation of the works, the Contractor cannot make a request for financial compensation for extension of time.

#### **Article 20: Safety on Site**

20.2 Further to the provisions of the General Conditions, it is the obligation of contractors to carry out a suitable, sufficient and systematic assessment of all the occupational health and safety hazards which may be present at the place of work and the resultant risks involved concerning all aspects of the work activity.

20.3 Further to the provisions of the General Conditions, it is also the duty of a contractor to cooperate with other employers, contractors and, or self-employed persons who share a common work place, on the implementation of Health and Safety provisions. The contractor or his designate shall co-ordinate necessary actions in matters which concern protective and preventive measures, and shall inform all on site as well as the Health and Safety Project Supervisor regarding any potential risks.

#### **Article 21: Safeguarding Adjacent Properties**

21.1 Further to clause 21.1 of the General Conditions, the contractor shall liaise and co-operate with the appropriate Authorities and occupiers of adjoining land and buildings likely to be affected by the works, for all matters regarding access, monitoring, third party rights, and similar.

#### **Article 22: Interference With Traffic**

22.3 The Contractor is responsible to obtain necessary permits that may be required if the works impact of traffic.

#### **Article 23: Cables and Conduits**

23.3 The contractor shall be responsible for locating existing drains and services, and underground cables and pipes, for seeking instruction from the appropriate authorities as to how to deal with such services, and for carrying out any necessary work relating to deviations or protection, or any other works deemed necessary by the respective Utility or authority.

#### **Article 25: Demolished Materials**

25.1 Demolition material unless indicated otherwise in the bills of quantities and by the supervisor in charge, shall become the property of the Contractor and the carting away and dumping charges are at the expense of the Contractor.

25.4 Further to article 25.4 of the General conditions, the contractor shall also take care to dispose of the waste material fully at his expenses and in an appropriate and environmentally friendly manner.

#### **Article 26: Discoveries**

26.2 Further to provisions of Article 26.2 of the General Conditions, the Contractor shall observe the provisions set out in the Cultural Heritage Act 2002 (CAP 445) at all times.

26.3 Further to the provisions of Article 26.3 of the General Conditions, any in filled fissures, caverns, reservoirs/cisterns, hollows, Quaternary deposits, or other features of geological, geomorphological, hydrological, palaeontological interest which are discovered must be reported immediately to the Superintendence of Cultural Heritage and to the Archaeological Monitor. The contractor shall halt the works and follow all instructions given by the Supervisor and Site Archaeologist to protect or to investigate further the discovery.

The Contractor shall co-ordinate and co-operate with the archaeologist appointed by the Contracting Authority with the Local Authorities at all times.

#### **Article 28: Soil Studies**

28.1 As per General Conditions of the Contract

#### **Article 30: Patents and Licences**

30.1 As per Article 30 of the General Conditions

#### **Article 31: Commencement Date**

31.1 The Commencement Date for this contract shall be 1 week from the Order to Start Works. The performance of the contract is to commence on order to start works. The order to start works will not be issued later than two (2) months from the last date of signature shown on contract.

No works however will be allowed to commence on site unless the Contractor has furnished the Contracting Authority with a certified true copy of the Insurance Policy together with

all documentation related to Health and Safety as well as the performance guarantee.

#### **Article 32: Period of Execution of Tasks**

32.1 The period of performance of this contract shall be 40 weeks from the Commencement indicated in the Order to Start Works.

The contractor will be expected to commit sufficient resources to carry out works on more than one area at the same time, to guarantee the on time completion of all the Works as specified in this tender.

#### **Article 33 Extension of the Period of Execution of Tasks**

33.4 Further to the provisions of Article 33 of the General Conditions, should the Contractor be granted an extension of the period of execution of the tasks that are the subject of this contract, the Contractor cannot make a claim for financial compensation for such extension in the period of execution of the tasks of the contract.

#### **Article 34: Delays in Execution**

34.1 Any delay in performance from the approved programme of works for this contract, will be charged 0.1% of the contract value per calendar day of delay up to a maximum of 20% of the contract value.

Upon reaching the maximum penalty, the Contracting Authority reserves the right to terminate the contract and seek the services of a third party for the completion of works.

#### **Article 35: Modification to the Contract**

35.8 The Contracting Authority has a right to increase or reduce works of a similar nature by a maximum of 15% of the contract value which have become necessary for the purpose of achieving the scope of the contract. These inter alia include the detection of unidentified works evident only once the finishing works commence including but not limited to uncovering and/or trenching of existing internal wall and close inspections can be carried out and/or interventions have commenced such as the repetition of cleaning interventions, the repetition of the application of materials, the consolidation, enhancement and plastering, additional quantities of the mechanical and electrical works identified in the BOQ which may be required as a result of the site conditions discovered on site. Such works would be resulting from close inspection of works accessible only once uncovering of existing walls and flooring takes place and/or such conditions are exposed during the course of works.

35.9 The Contracting Authority will have the right to instruct additional works up to a maximum of 15% of the contract value which have become necessary for the purpose of achieving the scope of the contract. Such works would be resulting from close inspection of works accessible only upon erection of scaffolding or exposed during the course of works. These inter alia include works evident only once the interventions have commenced such as the alternative cleaning and plastering interventions, the application of alternative treatment and utilization of other materials other than those envisaged in the tender specifications and different utilization of mechanical and electrical works may be required.

35.11 The provisions provided for in Article 35.11 of the General Conditions shall not be applicable to this contract.

35.12 The provisions provided for in Article 35.12 of the General Conditions shall not be applicable to this contract.

35.13 The provisions provided for in Article 35.13 of the General Conditions shall not be applicable to this contract.

### **Article 37: Work Register**

37.1 The Contractor shall maintain a Work Register (Work Diary) on the site, containing detailed daily reports in the template specified and/or approved by the Contractor's representative (either the Construction/Project Manager or the Site Manager) and approved by the Supervisor, including at least the following information:

- (a) weather conditions, interruptions of work owing to inclement weather, hours of work, number and type of workmen employed on the site, materials supplied, equipment in use, equipment not in working order, tests carried out in situ, samples dispatched, unforeseen circumstances, safety, health and welfare of persons and damage to property, progress of the Works, as well as progress of the Works orders given to the Contractor;
- (b) detailed statements of all the quantitative and qualitative elements of the work done and the supplies delivered and used, capable of being checked on the site and relevant in calculating payments to be made to the Contractor.
- (c) photographic records of the interventions as well as the state of the structures to be restored through this tender prior to the commencement of works. The photographs shall include records of any archaeological, historical, etc evidence discovered during the course of works; detailed mapping of all interventions carried out. The interventions shall be carefully mapped out in conformity to approved standards and conventions as agreed with and approved by the Architect and Civil Engineer/or Supervisor in charge on drawings provided by the Architect and Civil Engineer/or Supervisor in charge as per convention detailed by the Architect and Civil Engineer in charge. This mapping shall be submitted to the Architect and Civil Engineer in charge/or Supervisor in digital format (Version ACAD 2009 or compliant) and 2 colour printed copies; copies of method statement reports, construction management plans and updated programmes of works as specified in this document and approved by the Architect and Civil Engineer/or Supervisor.

This Work Register shall be made on daily basis and take the form of a bound document with an original and two copies for each day. The original shall be filled out by the Contractor, who shall sign it, then reviewed by the supervisor, who shall add his comments, if necessary, and countersign it. One copy shall be kept by the supervisor for its own record.

Entries made in the work register as work progresses shall be signed by the Contractor and countersigned by the Supervisor or his representative. When the Supervisor reviews each page, he shall add his comments if necessary, to draw attention to deficiencies in the Works or to give warning of difficulties that may arise from the Contractors method of working. He may also instruct in this Work Register that work shall stop in certain circumstances and the Contractor shall take appropriate action immediately. Such instructions shall be followed up by Administrative Orders. If the Contractor objects, he shall communicate his views to the Supervisor within 15 days following the date on which the entry or the statements objected to are recorded. Should he fail to countersign or to submit his views within the period allowed, the Contractor shall be deemed to agree with the notes shown in the register. The Supervisor may examine the work register at any time

and may make or receive a copy of entries which he considers necessary for his own record.

#### **Article 38: Origin**

38.1 No derogation to the rules of origin is authorised.

#### **Article 39: Quality of Works and Materials**

39.2 All designs, components, materials, and restoration interventions/methodologies shall be submitted to the Supervisor (Architect and/or Civil Engineer in charge) for written preliminary technical approval, prior to their implementation or procurement. All requests and documentation must be submitted with 15 calendar days prior to execution of works on site.

#### **Article 40: Inspection and Testing**

40.2 As specified in the General Conditions.

#### **Article 42: Ownership of Plants and Materials**

42.2 All equipment, temporary works, plant and materials on site owned by the Contractor or by any company in which the Contractor has a controlling interest shall, for the duration of the execution of the works be:

- a) Vested in the Contracting Authority.

#### **Article 43: Payments: General Principles**

43.1 Payments will be made in Euro.

Payments shall be authorized by the Contracting Authority, and paid by the Treasury Department.

| Payment Schedule      |                                                                  |                                                                      |
|-----------------------|------------------------------------------------------------------|----------------------------------------------------------------------|
| Pre-financing Payment | As per 44.1 of Special Conditions                                | 10% of contract value excluding cost of maintenance items in the BOQ |
| Interim Payments      | As per measured works                                            | 85% of contract value                                                |
| Retention Monies      | As per payment schedule in Clause 45.2 of the Special Conditions | 5% of contract value                                                 |

43.3 As per General Conditions.

#### **Article 44: Pre-financing**

44.1 Pre-financing to the Contractor of 10% of the contract value excluding the cost of

maintenance items in the BOQ, shall be obligatory.

44.2 Pre-financing amounting to 10% of the contract value excluding the cost of the maintenance items of the BOQ, shall be granted to the Contractor against the provision of a bank guarantee by Contractor in favour of the Contracting Authority of the equivalent amount.

44.3 Further to Article 44.3 of the General Conditions, the Contractor shall present to the Contracting Authority, within forty five (45) days of the signing of the contract, a bank guarantee of the amount equivalent to 10% of the contract value excluding the cost of the maintenance items of the BOQ, for the Contracting Authority to release the pre-financing payment of the same amount.

44.8 The pre-financing payment shall be repaid through percentage deductions in payment certificates as follows:

(a) Advance payment equivalent to 10% of the contract value excluding the cost of the maintenance items of the BOQ:

- Deductions shall commence in the payment Certificate in which the total of all certified interim payments (excluding the advance payment and deductions and repayments of retention) exceeds 10% of the Accepted Contract Amount less Provisional Sums; and
- Deductions shall be made at the amortisation rate of 10% of the cumulative amount of each payment certificate (excluding advance payment and deductions and repayments for retention) in the currency and proportions of the advance payment, until such time as the advance payment has been repaid in full; and
- With every 50% of the pre-financing amount being amortised, the Contracting Authority shall authorize the relevant financial institution to release the equivalent 50% from the pre-financing guarantee granted in terms of Article 44.3 of these Special Conditions. Thus, the pre-financing guarantee shall decrease proportionately throughout execution of the contract.

#### **Article 45: Retention Monies**

45.2 The sum of money retained from the interim payments shall be of 5%. This sum shall be paid upon submission of an equivalent retention bank guarantee (issued in the form provided in this tender document) by the Contractor to the Contracting Authority when issuing the Provisional Acceptance Certificate as specified in Article 57. The bank guarantee will be released upon issuing of the final acceptance of the works as per Article 58. The said retention guarantee shall be released only after the conditions requested under Art 58 are satisfied. The retention guarantee will be released within 45 days from when the Final Acceptance Certificate is issued.

#### **Article 46: Price Revision**

46.1 Tender prices are fixed and not subject to revision with the exception of that resulting from causes listed under Article 46.3 of the General Conditions.

46.3 As per General Conditions

#### **Article 47: Measurement**

47.2 The works shall be measured as detailed in the Bill of Quantities, and as specified in the appropriate clauses in the Technical Specifications - Section 4. The appointed contractor shall satisfy the Supervisor that the materials are such as specified or equivalent.

#### **Article 48: Interim Payments**

48.1 Interim Payments of sums due for the executed and provisionally accepted works shall be authorized by the Contracting Authority and payment will be issued by the Treasury Department within the Ministry of Finance paid against a valid invoice after works in accordance to quality and progress of works. The retention shall be released in accordance to Clause 45.2 of these special conditions. The Contractor shall submit his claim for progress payments to the Contracting Authority in writing. Such claims are to be supported by evaluation of the works executed and materials installed on site and show the value of the permanent works executed by him up to the end of the month. All claims shall be evaluated by the Contracting Authority in relation to the Bills of Quantities and Contract Rates and documentation produced by the Contractor and on the basis that such works have been executed in accordance with the Contract Documents and to the satisfaction of the Contracting Authority. Provided the Contracting Authority agrees with the statement, the relevant Payment Certificate will be issued.

#### **Article 50: Delayed Payments**

50.1 The Contracting Authority shall pay the contractor sums due within 60 days of the date on which an admissible payment is registered, in accordance with Article 43 of these Special Conditions. This period shall begin to run from the approval of these documents by the competent department referred to in Article 43.1 of these Special Conditions. These documents shall be approved either expressly or tacitly, in the absence if any written reaction in the 30 days following their receipt accompanied by the requisite documents.

50.2 Once the deadline laid down in Article 50.1 has expired, the Contractor may, within two months of late payment, claim late-payment interest:

- at the rediscount rate applied by the issuing institution of the country of the Contracting Authority;  
on the first day of the month in which the deadline expired, plus two percentage points (2%). The late-payment interest shall apply to the time which elapses between the date of the payment deadline (exclusive) and the date on which the Contracting Authority's account is debited (inclusive).

#### **Article 53: End Date**

The contract will be co-financed through the European Regional Development Fund 2014-2020, therefore the payment obligations of this contract will be concluded by end December 2022.



#### **Article 56: Partial Acceptance**

56.2 The supervisor will issue partial provisional acceptance upon completion of full works on the structure envisioned within the contract and not upon completion of works on parts of the structure envisioned within the contract.

56.3 The maintenance period shall run from the date of the Provisional Acceptance Certificate issued as per Article 57.

#### **Article 57: Provisional Acceptance**

57.6 Further to the provisions of Article 57 of the General Conditions, the Provisional Acceptance Certificate can only be issued once all pending snags included in the relevant snag list are appropriately addressed by the Contractor and to the satisfaction of the Supervisor.

#### **Article 58: Maintenance Obligations**

58.6 Further to the provisions of Article 58 of the General Conditions, the contractor shall guarantee that works carried out at the Pilgrim's Lodge in Mellieha through works specified in this tender document are adequately maintained for a period of 24 months from issuing of the Provisional Acceptance Certificate. The Contractor shall be responsible for remedying, at his expense, defects and damages during this period as specified in the General Conditions.

Any remedial works performed during the guarantee period (until 24 months after completion of ALL works described in this contract) shall be carried out as specified in this document and approved by the Supervisor. The contractor shall be responsible for providing all suitable means, for obtaining all permissions, and making all the necessary arrangements with all authorities concerned to carry out all the remedial works at any height levels at no extra cost to the Contracting Authority.

#### **Article 66: Dispute Settlement by Litigation**

If no settlement is reached within 120 days of the start of the amicable dispute-settlement procedure, each Party may seek:

- a) either a ruling from a national court, or
- b) an arbitration ruling, in the case where the parties, i.e. the Contracting Authority and the Contractor, by agreement decide to refer the matter to arbitration.

#### **Article 70: Further Additional Clauses**

70.1 The Supervisor will organise project management meetings (which may be held in person or on-line) and site meetings. The Contractor's representative must also attend these meetings in order to review the arrangements of future work. The Supervisor shall record the business of these meetings and supply copies of the record to those attending the meeting and Contracting Authority. In the record, responsibilities for actions to be taken shall be in accordance with the contract.

The Contractor's Key Experts must also attend these meetings when requested by the Supervisor and/or the Contracting Authority. The Supervisor shall notify the Contractor of the requirement of a particular Key Expert's attendance at least three (3) days prior to the meeting. The Contractor shall become liable to a penalty of €100 (one hundred euro) for each occurrence in which a Key Expert fails to attend meetings. Such penalties will be deducted from the next interim payment due.

70.2 Following the issue of an administrative order by the Supervisor, the Contractor shall execute the administrative order within the specified deadline. Without prejudice to other penalties which may be due in terms of the Contract, if the Contractor fails to respect the specified deadline for the respective administrative order, Contractor shall be liable to a penalty for mere delay in execution of the administrative order in the amount of €100 (one hundred euro) for each calendar day following the deadline until Supervisor certifies the completion of the administrative order, which penalty shall be deducted from the next interim payment. The Supervisor shall issue a weekly register of the issued administrative orders and shall send a hard copy to the Contractor and Contracting Authority. This register of administrative orders shall at least indicate the administrative orders which have not been fully executed by the specified deadline. This register shall include the amount of penalties per administrative order applied up to the date of issue of the register and the amount to be deducted in the next interim payment.

70.3 The Contractor shall be liable to a penalty of €2,000 (two thousand euro) if he fails to abide with any of the conditions of permits for works issued by ERA [Environment and Resources Authority], the PA [Planning Authority] and the BRO [Building Regulation Office] or any other Malta Government Authority and related to or in connection with this contract. This penalty shall be applied for each occurrence where the result of the non-compliance is irreversible. In case the effects and results of the non-compliance are reversible the contractor shall be liable to a penalty of €1,000 per calendar day commencing from the deadline set by the Supervisor to complete the remedial works. The reversibility of the breach of permit conditions shall be determined by the Supervisor. The penalties in this Article shall apply without prejudice to the other penalties that may be issued by the Planning Authority and/or other Governmental Entities. Penalties will be deducted with the next interim payment due.

## SECTION 4 -SPECIFICATIONS/TERMS OF REFERENCE (Note 3)

**Note:**

Where in this tender document a standard is quoted, it is to be understood that the Contracting Authority will accept equivalent standards. However, it will be the responsibility of the respective bidders to prove that the standards they quoted are equivalent to the standards requested by the Contracting Authority.

### 1. SCOPE:

- i. The objective of these Works is to convert a number of rooms found on the first floor level of the Archdiocese of Malta into the Archives of the Archdiocese of Malta. The works include the following:
  - a. Manufacture, transportation and installation of a metal frame structure to support archival storage shelves on two levels as shown in the attached drawings.
  - b. Internal structural alterations, plastering and painting, installation of flooring, gypsum partitions, fire doors, etc.
  - c. Installation of a mechanical & electrical works.
  - d. Supply of furniture and fixtures
- ii. Works will be carried out within a Grade 1 scheduled building, and it is therefore of primary concern that all operations are carried out with a full respect to all parts of the structure as well as to the adjacent areas of the building. This will apply to the handling and transportation of materials, their storage, disposal of water and materials, the selection of the appropriate tools to be used on the historic fabric and how mechanical plant is handled and used.
- iii. The right is reserved to stop any operation that is deemed by the Architect to be insufficiently respectful of the historic fabric and order the making good of any consequential damage at the cost of the Contractor.

## 2. METAL FRAME STRUCTURE

### Special Structure 1 - Metal Frame Structure (including finishes)

#### 2.01 Scope of Works

The design and manufacture of the metal frame structure will be as shown in the relative drawings and/or as instructed by the Architect in Charge.

The main objective of the proposed works shall be as follows:

- i. To structurally design the metal frame structure, as shown in the relative drawings, to support an archival storage system similar to that specified in this tender. The maximization of space for archival storage must be taken into account during the design process and when assuming the design load. The structural design calculations must be signed by a warranted architect who shall assume full responsibility for its structural design in terms of the Laws of Malta. Works are to also include for the design of the ramp and its laminated parquet timber flooring.
- ii. Preparation of shop and detailed design drawings. Works can only commence following the approval of the Contracting Authority.
- iii. Structural works to include the insertion of supporting beams into the masonry walls of the archival room. Procedure to be adopted must be discussed between the Contractors Architect and the Contracting Authority. Any intervention within the existing historic structure must be carried out in accordance with the approved Planning Authority Permits and any instructions given by the Planning Authority and/or the Superintendence of Cultural Heritage and/or the Architect in Charge.
- iv. Installation of the Metal Frame structure, as shown in the relative drawings.
- v. Installation of laminated parquet timber flooring on the two archival levels and staircase threads, reading area and ramp.
- vi. Preparation works necessary to receive the archival storage system.
- vii. Installation of laminated timber cladding to metal frame structure (refer to drawings)
- viii. Installation of frameless laminated glass railings at ground and upper floor of the metal framework structure, and laminated glass railing with integral steel handrail on the metal staircase.
- ix. Preparation works needed for the installation of the mechanical and electrical works within the metal frame structure, such as for the passing of electrical wiring, and installation of electrical points and light fittings, etc. Liaison with the Electrical and Mechanical engineer is necessary.
- x. Painting and finishing works to the metal and timber works as specified.

## **2.02 New Metal Works**

### **2.02.01 General**

1. All structural steel used shall be Grade 43 steel and shall be specified as Class D subclass 1 in MSA EN 10163-1. The above shall be used for all metal parts indicated in the attached drawings or specifications (unless otherwise specified).
2. All materials shall be the best of their respective kinds, free from defects, and to be obtained from approved manufacturers.
3. All work shall be carried out in a workmanlike manner and strictly as directed by the Architect in Charge and the Contractor's Structural Engineer (Perit).
4. The materials, in all stages of transportation, handling and storage, shall be kept clean, free from damages and breaking, bending and distortion.
5. All smith's work is to be forged clean, all screwed work is to have full internal and external threads.
6. Welded joints are to be neatly made, filed smooth and left clean and an adequate means shall be employed for temporarily fastening the parts to be welded together until the joints are welded.
7. When requested by the Architect in Charge, shop drawings are to be provided by the Contractor for approval prior to manufacture.

## **2.02.02 Welding**

All welding works shall be carried out entirely in the workshop. The edges of the steel members to be joined are to be cleaned and shaped for the specific type of weld employed. The surfaces to be welded must be clean and dry to ensure that the weld metal is adequately bonded to the parent metal. Welding shall be carried out by arc welding.

The types of welds to be used are listed below.

(i) Fillet Weld: This weld shall be used when the two parent metal members are to be joined at an angle. This weld takes the form of a fillet of weld metal deposited at the junction of the two metal members. The surfaces of the members to be joined are to be cleaned and the members fixed in position. Unless otherwise specified, the throat thickness of 10mm shall be used.

(ii) Butt Weld: This weld shall be used to join plates at their edges with the weld metal filling the gap between them. The section of the butt weld employed depends on the thickness of the plates to be joined and whether welding can be executed from one side only or from both sides.

The edges of the plates to be joined shall be cleaned and shaped as necessary, the plates fixed in position, and the weld metal run in from the filler rod.

Thin plates up to 4mm thick shall require no shaping of their edges. Plates up to 12.5mm thick shall have their edges shaped to form a single V weld. Plates up to 25mm thick shall be joined together either with a double V weld, where welding can be carried out from both sides or by a single U where welding can only be carried out from one side.

The throat thickness of the butt weld is equal to the thickness of the thinnest plate joined by the weld.

## **2.03 Protective Treatment**

1. Steel shall be protected against corrosion by hot dip galvanising complying with MSA EN 3834, or as directed by the Engineer.
2. All rust, loose scale, oil and dirt shall be removed from all surfaces before treatment.
3. All metal are to be carefully sanded down prior to welding.
4. Small areas of hot dip galvanised coating damaged by welding, cutting or by excessive rough treatment during transit and erection shall be renovated either by the use of low melting point zinc alloy repair rods or powders made specifically for this purpose, or by the use of at least two coats of good quality zinc-rich paint to BS 4652 or the MSA equivalent. Sufficient material shall be applied to provide a zinc coating at least equal in thickness to the original layer.
5. On all galvanised metal works, painting is to consist of a primer, following by the application of a 2-pack epoxy protective coating system, exposure Class C5-M as per EN ISO 12944 (1998) applied according to manufacturer's specifications. A sufficient period is to be allowed for the galvanising coat to set/dry out prior to the application of the finishing coat.
6. The paint used shall be in the colour and type chosen by the Engineer in Charge.

## 2.04 Structures to be Designed by the Contractor - Scope of the Works and Exclusions

Table 1: Structures to be designed by the Contractor - Scope of the Works and Exclusions

| Structure No.<br>(Drawing Reference)                              | Structure             | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Exclusions                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Structure 1</b><br>(refer to drawings attached to this tender) | Metal Frame Structure | <p>Constructed in materials according to the design to be carried out by the Contractor and according to the Specifications and the “Designated Outlines” in the Drawings:</p> <ol style="list-style-type: none"> <li>1. Structural Inspection and Survey of existing historic structure and underlying rooms;</li> <li>2. Detailed assessment and appraisal of the structural integrity of the existing structure to establish load bearing capacity and structural condition for design purposes;</li> <li>3. The contractor shall be responsible to retain the structural integrity of existing structure.</li> <li>4. Sampling and Testing;</li> <li>5. Any necessary works required to insert the supporting beams into the walls, including the installation of a concrete spreader beam.</li> <li>6. Temporary framing /propping of structural elements during works;</li> <li>7. Movement joints;</li> <li>8. Preparation of ducting and other works necessary to receive light fittings and wiring, etc.;</li> <li>9. Works necessary to receive the archival storage system specified.</li> </ol> | <ol style="list-style-type: none"> <li>1. Internal finishing Walls;</li> <li>2. Window and Door Apertures;</li> <li>3. Utility Services Infrastructure;</li> <li>4. Lighting and luminaires(including cables);</li> <li>5. Cables;</li> <li>6. Switchgear equipment;</li> <li>7. Tiles, decorations and finishes other than those described in the description of works;</li> </ol> |

| Structure No.<br>(Drawing<br>Reference) | Structure | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Exclusions |
|-----------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|                                         |           | <p>10. Installation of timber flooring in archival space, ramp and timber threads on staircase.</p> <p>11. Installation of laminated timber cladding to metal frame structure (refer to drawings)</p> <p>12. Installation of laminated frameless glass railing.</p> <p>13. Determining the most adequate material (for painting / varnishing) to use for the protection of all metal and timber works as specified.</p> <p>14. Subject to the approval of the Contracting Authority;</p> <p>15. All that is necessary for the completion of the Works within the “Designated Outline” shown in the Drawings except for those works scheduled not to be included and which are listed as “Exclusions”.</p> |            |

### **Notes**

The structures defined in Table 1 above represent the references assigned to each structure to be designed by the Contractor which are also reflected and identified in the respective Tender Drawings.

### **1. Special Structures - Design and Performance Criteria and Parameters**

- a) This section defines the criteria that must be adopted by the Contractor for the design and construction of the special structures (including any associated sub-structures and /or elements / components) that are included and referenced in this Appendix.
- b) The design and construction of the various special structures include but are not limited to the following analyses and design parts:

#### **Analyses**

- i. Determination of structural loading models;
- ii. Determination of permanent actions;
- iii. Determination of variable actions;
- iv. Determination of wind actions;

- v. Determination of thermal actions;
- vi. Determination of vertical and horizontal forces, centrifugal forces and transverse forces and their use in the design;
- vii. Determination of whether a dynamic analysis is required;

**Design**

- i. Design of metal frame structure;
- ii. Design of corrosion protection and finishing systems for metal structures and elements;
- iii. Design of joint sealing;
- iv. Design of timber flooring and frameless glass railings including their finishes;

**2. Special Structure 1: Metal frame structure**

- i. The structural inspection of the existing building shall establish the structural integrity and load-bearing capacity of the structure.
- ii. In-depth inspection to detect any deficiency not readily detectable using routine inspection procedures. This may necessitate sampling and testing of the structural element such as sounding, and coring.
- iii. Selection and implementation of condition surveys, tests and analysis. The condition surveys and tests to be selected will be those appropriate for the site conditions on an assessment of the structural factors and available information.
- iv. Provide numerical structural calculations, as prepared and endorsed by the Structural Engineer, for the design of the metal frame structure as described in the technical specifications and tender drawings.
- v. The contractor is to take consideration the structural interaction between the new structure and adjacent structures and elements which are existing and shall be retained.
- vi. Structural calculations are to be presented as described in “Presentation of Structural Calculations” of this Appendix.

**2.05 Laminated Frameless Glass Railing**

**2.05.01 Glazing materials**

- a) Glazing type and thickness shall be selected, using the recommendations given in BS 6262, to withstand the design loads calculated in accordance with BS 6375-1 or BS 6399-2. The type and quality of glass shall conform to BS 952-1.
- b) The exposed edges of glass adjustable louver blades shall be abraded, ground or polished.



c) Work sizes and manufacturing tolerances:

i. Work sizes

The work sizes for overall length and height shall be documented. The site survey of the glass railings will be the responsibility of the contractor and comply with BS 6180.

ii. Manufacturing tolerances

The size of an assembled frame shall be within  $\pm 1.5$  mm of the documented work size in any dimension, and the difference between the diagonals of the assembled frame shall be not more than 4 mm.

### **2.05.02 Glass and Glazing**

a) Glass railings shall be glazed in accordance with the recommendations given in BS 6262.

NOTE: Attention is drawn to the glazing safety recommendations of BS 6262-4.

b) Safety glass to be at least 6.8mm laminated to BS 6262 & BS 6201- Glass in Buildings. All glazing must be installed in accordance with BS 6262.

d) Glass is to be the best of its respective kind to B.S. 952. Glass is to be 4 or 5mm thick, according to the size of the panes, "Toughened laminated glass" will be used except where otherwise indicated.

e) The glass is to be cut to sizes with a small clearance and sprigged.

f) Fixings and railings shall be standard products approved by the Engineer.

g) All rebates are to be well cleaned before fixing glass. All glass is to be left clean inside and outside on completion and any defective or cracked glass replaced at the cost of the contractor.

## **2.06 Wood Laminate Parquet Flooring**

**2.06.1** The scope of these works is the supply, delivery and installation of laminate parquet, underlay, skirting and other accessories.

### **2.06.2 Parquet Type:**

- i. The parquet supplied must be of the click system laminate floor parquet.
- ii. The Reaction to Fire must be Class C fl-s1;
- iii. Abrasion Criteria resistance of the parquet is to be level AC4 (Class 32).
- iv. Thickness to be 8mm.
- v. Colour - finish wood effect

### **2.06.03 Parquet Underlay**

- i. Thickness to be approximately 1.2mm, maximum of 3mm.
- ii. To be supplied in rolls, approximate size of roll being 1m x 15m
- iii. Density to be in the region of 150kg per cubic metre.
- iv. Impact Sound Reduction as per EN-ISO 10140-3:2010 to be in the region of 21Db Lw.

### **2.06.04 Parquet Skirting**

- i. Width to be approximately between 18mm and 22mm
- ii. Colour - to match parquet

## **3. ARCHIVAL STORAGE SHELVING SYSTEM**

**3.01** The scope of these works is the supply of a mobile shelving system which will be located on two levels within the metal frame structure with the aim of maximizing the use of space. It should be capable of holding the historic archives of the Archdiocese of Malta and must be capable of supporting the future purchase of additional storage shelving once the archival material increases.

**3.02** The mobile shelving system setup will allow for the availability of an access corridor on one side to maximize the archival storage space.

### **3.03 Specifications**

**Prices should be quoted per 'UNIT' as defined below.**

#### **General Specifications**

'UNIT' size and specification:

|                 |                      |                                                                                                                                                                                                                                                                                                                            |
|-----------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Shelving</b> | Overall Height       | Approx. 200cm                                                                                                                                                                                                                                                                                                              |
|                 | Overall Width        | Approx. 300cm                                                                                                                                                                                                                                                                                                              |
|                 | Number of shelves    | 5                                                                                                                                                                                                                                                                                                                          |
|                 | Depth of each shelf  | 45cm                                                                                                                                                                                                                                                                                                                       |
|                 | Clearance from floor | 20cm                                                                                                                                                                                                                                                                                                                       |
|                 | Layout               | Layout shown in drawings and plans included in this document are just indicative. It is essential that the system allows sufficient air circulation for the records being stored. Shelving system and tracks should be capable of allowing for the installation of future shelving systems as the archival material grows. |

**IMPORTANT:** plans attached to this document are for informative purpose ONLY. The exact dimensions must be taken once the workshop drawings for the metal frame structure are done. It is important that proper liason is carried out so that the best use of space is made.

**Specific requirements (to BSI PD 5454:2012 Guide for the storage and exhibition of archival material):**

#### **Uprights and Shelves:**

|          |                                                       |
|----------|-------------------------------------------------------|
| Material | Steel                                                 |
| Coating  | Epoxy Paint / Powder Coating (thickness of paint 120μ |

#### **Shelves:**

|                |                                                                                                         |
|----------------|---------------------------------------------------------------------------------------------------------|
| Dimensions     | 1000mm (+/- 50mm) x 50 mm (+/- 25mm)                                                                    |
| Weight Bearing | Minimum 100 kilograms                                                                                   |
| Height         | Individual shelves should be adjustable to allow for varying sizes and types of items in the collection |

Shelf space must not be obstructed so as to ensure safe withdrawal of documents or records.

Each shelving unit is to have an in-built sensor based low-heat emitting lighting.

Mobile shelving system:

- i. The mobile shelving Units are to be equipped with a manual ergonomic system for the movement of the shelving units. A torque convertor system is to be included to allow easy movement of the shelving units.
- ii. The base is to run on cover rails using a wheel system
- iii. Diagonal struts are to be included to ensure the sturdiness of the shelving system
- iv. The shelving system must also include a safety anti-tip device

## **4. PLASTERING and PAINTING WORKS**

### **4.01 Outline of Works**

The works to be carried out include the plastering and painting of all internal walls and ceiling as specified in the Bill of Quantities or as directed by the Architect in charge of the works.

### **4.02 Materials**

#### **(a) Lime**

Lime for undercoats and finishing coats is to be of an approved quality. Quicklime shall be slaked in a manner appropriate to its type. Hydraulic lime shall be of an approved patent type, and shall be used as directed by the Architect in Charge.

#### **(b) Sand**

Sand for plastering shall be either naturally occurring or shall consist of crushed rock. It shall be hard, clean and free from adherent coatings and shall not contain any appreciable amount of clay balls or pellets. It shall be free from deleterious matter likely to affect adversely the hardening, strength, durability or appearance of the plaster or applied decoration or cause corrosion. Its grading is to be approved by the Architect.

#### **(c) Water**

Water shall be clean, free from harmful matter and shall be fit for drinking. All expenses to bring such water on site are to be borne by the Contractor.

#### **(d) Branded Materials**

All branded materials shall be delivered to the site in their original packages, bearing the trade names of the material concerned. Cement and hydrated lime shall be stored off the ground, under cover and away from all possible sources of damp.

#### **(e) Other Materials**

All other materials are to be approved by the Architect or his representative.

### **4.03 Colours**

Colours to be used shall be as directed by the Engineer as the works proceed. Tile and colour samples shall be provided by the Contractor when required by the Engineer at no additional cost to the contract.

### **4.04 Work on Site**

The work shall consists in:

- (a) Masonry walls, where directed, are to be scraped smooth where considered necessary for the proper execution of the works;
- (b) Plastering of all exposed faces of internal masonry, as later specified;
- (c) Pointing all internal stone, as later specified;
- (d) Applying 2 coats of a water-based paint on internal rendered masonry surfaces in the colour directed by the Architect in charge;
- (e) All other related works required to complete the work in its entirety. The whole of the work shall be carried out in a workmanlike manner to the satisfaction of the Architect. Any work rejected through non-compliance with the specification shall be removed and replaced at the expense of the Contractor.

All unused material and plasterer's waste shall be cleared from the site on completion of the works.

#### **4.05 Preparation**

Before applying finishes, surfaces shall be allowed to dry out completely. Efflorescence shall be removed by wiping first with a dry coarse cloth and then with a damp cloth. The surface shall then be left for 48 hours to see if further efflorescence will pass through. The surfaces shall be cleaned to remove dust, dirt, plaster splashes, etc., cracks, and other imperfections shall be cut out and made good with a suitable plaster or a sand/cement mix as appropriate and shall be allowed and shall be allowed to dry out thoroughly. When the surfaces are completely dry, they shall be treated as described above.

#### **4.06 Proportions**

The materials used for plastering shall be proportioned by volume by means of appropriate containers. Alternatively it may be required to proportion the materials by weight.

#### **4.07 Working Time**

Plastering mixes containing self-setting materials shall be used up within two hours of the first contact of the cement with water.

All material remaining after this period shall be discarded.

#### **4.08 Mixes**

All vertical and horizontal joints in all wall surfaces shall be raked to a depth of 12mm, cleaned, wetted and properly pointed in lime-based mortar. Masonry walls are to be scraped smooth where considered necessary prior to pointing. All internal walls are to be flush pointed in the specified lime-based mortar and two coats of the specified water-paint applied.

#### **4.09 Paint Application**

4.09.01 The following clauses shall apply for paint work:

- (i) All painting material described in the Specifications are to be in accordance with British Standard Specifications and they must be to the satisfaction of the Engineer to whom samples are to be submitted for approval prior to the execution of the works.
- (ii) All paint shall be thoroughly mixed before use, and shall be stored to minimise exposure.
- (iii) Thinning of materials where necessary shall be carried out with the type of thinner and proportions recommended by the manufacturer of the paint.
- (iv) All primer shall be applied by means of a brush.
- (v) Each coat of paint shall be allowed to harden before the next is applied. Where necessary, each coat shall be rubbed down with fine sand paper to remove any blemishes.
- (vi) No exterior painting shall be carried out under adverse weather conditions.
- (vii) No primer coats shall be applied until the surfaces have been approved by the Engineer. No undercoat or finishing coats shall be applied until the previous coats have been similarly inspected and approved.
- (viii) Painting shall not be carried out in dusty conditions. Floors must be swept and washed before painting.
- (ix) All colours and finishes are to be selected or approved by the Engineer and provision must be made for the execution of trial areas on the site as required.
- (x) Any rust on steelwork must be thoroughly removed and the steel coated with approved primer.
- (xi) All galvanised metalwork is to be painted with one coat primer before fixing in place.

4.09.02 Where indicated, internal walls shall be finished by one coat lime wash, one undercoat and two finishing coats of plastic emulsion paint.

4.09.03 All metalwork shall be primed, and painted with two undercoats and a semi-gloss enamel finish.

#### **4.10 Pointing Works**

1. Any mix to be used for pointing is to be lime based and mixed in proportions which shall be agreed upon by the Architect in charge.
2. The new pointing on old weathered surfaces is to match in colour the old weathered pointing as much as possible. A small trial patch of this pointing is to be prepared for the approval of the officer in charge.
3. Using the materials specified in this tender, the Contractor is requested to point all areas specified by the Architect in Charge.
4. All metal fixtures, wires, nails, electricity conduits, etc. shall be carefully removed from the facade.

5. Prior to the pointing of the joints, the contractor is to ensure that, where present, all weeds, vegetation, etc. are carefully removed from the joints without causing any damages to the stone fabric.

#### **4.11 Standard of work to be obtained**

- (a) Any open mortar joints and cracks shall be re-pointed using a lime-based mortar. The mix, colour, and type of material to be used shall be that specified by the Architect in Charge. On no account will any cementitious material be resorted to unless specifically ordered by the Architect in Charge.
- (b) Mixing the pointing mortar will be done by means of gauging vessels to ensure consistency of the mix chosen at all times.
- (c) The method of re-pointing to be followed is as follows:
  - (i) Remove any existing defective mortar joints;
  - (ii) Wash down;
  - (iii) Re-point;
  - (iv) Cure.
- (d) The existing defective mortar joints will be raked out to a depth of not less than 15mm. Where joints are defective to a greater depth, then all loose mortar is to be removed, irrespective of depth. This will be done by using small mason hand tools, including small hacksaw blades and narrow screwdrivers. This process is to be undertaken by skilled operatives who must ensure that no damage is caused to the arris of the stone, features, cornice bands, and the like.
- (e) Once the raking is complete, the joints will be flushed with clean water to remove all loose material. The mix chosen and method used for pointing shall be that specified in these specifications.
- (f) The pointing is then completed by introducing the mortar to the joints using masons trowels. The Contractor must ensure that all pointing works performed are made as narrow as technically possible. Most of the works may thus have to be carried out using specially sized trowels. The joints are to be filled with mortar to ensure that no voids are left within any one section of the pointing works. Where joints are deeper than 20mm, the mortar is to be applied in two separate operations; one to back out the joint, and the second to complete the point to the stone.
- (g) During the course of the works, the contractor is to ensure that all pointing is adequately cured, and both joints and stone have to be wetted constantly in order to avoid plastic cracks, etc. during the curing of the mortar.

#### **4.12 Defective Work**

The Contractor shall carry out all other related works required to complete the work in its entirety. The whole of the work shall be carried out in a workmanlike manner to the satisfaction of the Engineer.

The whole of the plasterer's work is to be finished with true and even surfaced, angles and arrises, and left perfect on completion. Surfaces which are uneven or which are not plumb shall be dubbed out with mortar before being rendered. In some cases it may be necessary for the contractor to apply additional rendering coats without extra charge.

Any work rejected through non-compliance with the specification shall be removed and replaced at the expense of the Contractor.

All unused and waste materials shall be cleared from the site on completion of the works.

#### **4.13 Making Good**

The Contractor is to include for all necessary rules, running arrises, splays etc. He is to make good and point all chasing carried out for other trades, e.g. electricity and plumbing, point round all timber frames and shutters. He shall also fill in and point all holes, cracks, etc. resulting from works of other trades. The joint between tiles and walls is also to be pointed (tberfil) in white cement. The joint between roof surface and parapet walls shall be finished with a cement sand fillet as directed.

### **5. NON-LOADBEARING GYPSUM PLASTERBOARD**

#### **5.01 Compliance - Sample Size and Frequency of Sampling (where applicable)**

Where applicable, sample size and frequency of sampling for compliance shall be established on the basis of standard statistical guidelines.

#### **5.02 Compliance - Testing and Certification**

Compliance shall be demonstrated through testing and/or certification of products and/or processes as outlined in the ensuing clauses.

#### **5.03 Gypsum Plasterboard - General**

i. Gypsum plasterboard shall comply with EU Directive 89/106/EEC as implemented by the relevant decision.

ii. General requirements, characteristics and test methods for gypsum plasterboard shall comply with EN 520.

iii. The gypsum plasterboards shall be installed in accordance with the recommendations of BS 5234, Parts 1 and 2, Code of practice for Internal Non-Load bearing Partitions.

iv. The Contractor shall abide fully with the manufacturer's installation guidelines and recommendations. A copy, in English, of these guidelines shall be submitted to the Project Manager before the commencement of the installation.

#### **5.04 Wall Grades - Category of Duty**

The category of duty rating, as defined in accordance with the recommendations of BS 5234, Parts 1 and 2, Code of practice for Internal Non-Load bearing Partitions, shall be Grade "Heavy Duty".

#### **5.05 Gypsum Plasterboard - Metal Frame Support Sub-Structure**

i. The support frame and channels shall be installed in accordance with the recommendations of BS 5234, Parts 1 and 2, Code of practice for Internal Non-Load bearing Partitions and with the manufacturer's installation guidelines and recommendations.

ii. The Contractor shall abide fully with the manufacturer's installation guidelines and

recommendations. A copy, in English, of these guidelines shall be submitted to the Project Manager before the commencement of the installation.

The metal framing components shall comply with EN 14195.

ii. The support frame shall comply with BS EN 10142 and BS EN 10143, Specification for continuously hot-dip metal coated steel sheet and strip.

The frame channels and studs shall comply with BS 7364, Specification for galvanised steel studs and channels for stud and sheet partitions and linings using screw-fixed gypsum wallboards.

A timber sole plate may be required on uneven floors.

A damp proof membrane shall be installed along the full partition floor channel length.

#### **5.06 Sealing**

i. The boards shall be sealed using a proprietary sealant recommended by the manufacturer.

#### **5.07 Fire Protection**

The plasterboard surfaces shall be rated as Class Euroclass A1 (EN 135011) and provide at least a 2 hour Fire rating.

#### **5.08 Deflection Limit**

The limiting deflection of the system shall be as indicated by the Manufacturer.

### **6. DOORS & APERTURES**

#### **6.01 On Site Measurement**

For items to be installed within a structure the Contractor shall ascertain the actual dimensions of the part of the structure accommodating the respective item by means of site measurement prior to the manufacture of such item.

#### **6.02 Technical Literature**

The Contractor may be requested to submit further detailed technical information in addition to that presented with the tender regarding the type of assembly, test performance characteristics, the proposed finish and any other information which may be required to clarify construction details.

#### **6.03 Design and Drawings**

The Contractor shall provide shop drawings in hardcopy format (and in electronic format) and detailed schedules for all units when so requested by the Project Manager. Prior to the start of the works the Contractor shall submit for the approval of the Project Manager all construction and dimensional details, template designs of moldings / paneling and details of all fittings.

#### **6.04 Transport and Installation**



The Contractor is responsible for the safe transport and installation of the units ensuring that all are in good working order and that the locking devices and holding pegs are all in place.

#### **6.05 Workmanship**

The frame and hinging arrangement shall be such as to support the weight of the structure without any jamming, excessive sagging, twisting or distortion. The Contractor shall comply with any special security provisions and incorporate any such requirements if so instructed by the Project Manager. The design shall incorporate air and/or dust seals.

#### **6.06 Construction of Solid Wood Doors**

The doors shall have a mortice and tenon joint and forked joints in all timber sections. Unless otherwise indicated in the Drawings the finished thickness shall be at least 45mm and 25mm for panelling.

#### **6.07 Construction of Flush Doors**

The doors shall have a skeleton framed core, with at least half of the section in timber (semi-solid core). Unless otherwise indicated in the Drawings the finished thickness shall be at least 41mm, the side and top rails shall have a section of at least 80mm x 38mm, the bottom rail at least 100mm x 38, whilst the centre rails shall have a section of at least 165mm x 38mm, with a proper lock block, securely fixed to resist regular use. The inner part should have honeycomb cardboard. Skeleton framed doors shall have either plywood facings with a colored laminated plastic 0.8mm thick or perfectly flat (pressed) finish on fibre board 6mm.

The door frames shall be made of solid beech wood sections. They shall be securely attached to the wall by metal plugs, properly hidden. The doors shall incorporate wind / dust seals to the approval of the Project Manager.

#### **6.08 Treatment with Preservative**

All wood, including carcass, shall be impregnated with wood preservatives. All surfaces cut after impregnation shall be liberally swabbed with preservative in accordance with the manufacturer's instructions. The wood shall, as far as is practical, be cut to its final dimensions before treatment, and timber for joinery shall be fully worked and ready for framing before treatment. Where cross-cutting cannot be avoided or where further dressing is necessary, all surfaces exposed by such work shall be liberally swabbed with the approved wood preservatives. All organic solvent preservative solutions must comply with Class F/N Treatment: (fungicidal/insecticidal) of BS 5707: Part 1 and/or BS 5268 Part 5. All wood shall be penetrated by the preservative and the minimum depth of penetration shall be 12mm. Treated external joinery shall not be machined, drilled, etc. and shall not be reduced in size. Where treated timbers are cut, e.g. bird's mouthings, notches, etc., these exposed areas shall receive two liberal brush coats of a preservative complying with BS 5707.

#### **6.09 Installation**

During installation units and frames shall not be twisted nor forced to fit them into openings. The selection of the sealant shall be based on its adhesion compatibility with the specified wood and adjacent wall materials. All units shall be checked for correct alignment and operation and before permanent anchoring. Anchoring shall have countersink anchor heads. All anchors shall be concealed by closed door or, in the case

of fixed units, with plugs.

#### **6.10 Doors, Gates and Shutters - General**

Doors, windows, gates and shutters shall comply with EU directive 89/106/EEC as implemented by decision 95/204/EC of 1995.

#### **6.11 Hardware and Ironmongery - General**

All hardware shall be fixed in accordance with the manufacturer's instructions. Hardware shall be protected prior to and after fixing until completion of the works and damages shall be replaced at the Contractors own expense. Anchor bolts shall be galvanized or stainless steel.

#### **6.12 Hardware and Ironmongery - Technical Characteristics**

Technical characteristics of hardware shall comply with the following:

- |                                                                      |          |
|----------------------------------------------------------------------|----------|
| i. Corrosion resistance of Hardware                                  | EN 1670  |
| ii. Lever handles and Knob furniture                                 | EN 1906  |
| iii. Locks and latches                                               | EN 12209 |
| iv. Single Axis hinges                                               | EN 1935  |
| ii. Methods of test for operating forces shall be as per EN 12046-2. |          |

#### **6.13 External Doors - Weather Performance**

Doors shall perform to the following parameters:

The test methods for conformity purposes shall be as follows:

|                                                    |                     |
|----------------------------------------------------|---------------------|
| Air Permeability                                   | Class 4 EN 12207    |
| Resistance to repeated Closing and Opening         | Severe EN 12400     |
| Resistance to wind Load                            | Class C5 EN 12210   |
| Water tightness (Exposed)                          | Class 9A EN12208    |
| Water tightness (Unexposed)                        | Class 6B EN12208    |
| Resistance to Soft and heavy body Impact (Windows) | Heavy Duty EN 13049 |
| Resistance to Soft and heavy body Impact (Doors)   | Severe EN 949       |

Industrial, Commercial and Garage Doors and Gates without Fire Resistance or Smoke Control Provisions

Test methods shall be as follows:

|                  |          |
|------------------|----------|
| Air Permeability | EN 12427 |
|------------------|----------|

|                                 |          |
|---------------------------------|----------|
| Mechanical Aspects              | EN 12605 |
| Resistance to Water penetration | EN 12489 |
| Resistance to wind Load         | EN 12444 |
| Safety (If power operated)      | EN 12445 |

#### 6.14 Glazing

All glass for glazing shall comply with EU Directive 89/106/EEC as implemented by the relevant decision. All glazing shall be installed in compliance with the recommendations in BS 6262, Code of Practice for Glazing for Buildings.

All glass shall be laminated safety glass complying with BS EN ISO 12543-1, 2, 5 and 6. Any pane of glass which is positioned within an area defined as within a critical impact zone or prone to human impact by BS 6206 shall comply with Class 2(B)2 of EN 12600.

Doors and side panels must be Class 2(B)2 of EN 12600 if the width is greater than 900mm.

The impact test method shall comply with EN 12600. No wired glass shall be used.

All glass shall be free from scratches, bubbles, cracks, ripples, dimples and other defects.

No wired glass shall be used. The thickness and appearance of glass shall be as indicated in the Drawings.

Where fire resistance of the glass is to be specified it shall be in accordance with the classification in BS EN 357.

All external glazing shall be designed to resist a pressure of 600Pa in both air (wind) permeability and water- tightness testing. Testing shall be performed in accordance with BS 6375 - Performance of Windows, under all conditions and with full allowance made for deflections and other movements.

All glazing shall be accurately sized, with clean undamaged edges. Glazing units shall be set on all four sides of the aluminum framed and sealed with neoprene or equivalent weather gaskets in such a way as not to be disturbed should gaskets need replacing. Proprietary compressible rubber shall be applied at intervals between the profiles and the glass.

The Contractor shall provide certification documentation to show that glazing elements comply with the specifications. The Contractor shall submit the manufacturer's recommendations for cleaning and for on-going maintenance of the glazing units, and upon completion, shall leave all glazing units clean in accordance with these recommendations, and to the satisfaction of the Project Manager.

#### 6.15 Door Master Key System (Where Specified)

Doors shall be equipped with a mechanical master key system. The system shall permit the opening of locks by their own individual key and by the master key.

The locking system shall be patented by a reputable manufacturer. The cylinder aperture shall offer protection from picks and breaking tools with supplementary anti-

drill protection. The key combinations shall be in compliance with current European Standards.

The system shall allow for future additions and expansions. The cylinders shall comply with BS EN 1303, Building Hardware, and Cylinders for locks, Requirements and test methods. The classification level shall be as follows:

Digit 1 Grade1

Digit 2 Grade 5

Digit 3 NA

Digit 4 Grade 0

Digit 5 NA

Digit 6 Grade 0

Digit 7 Grade 4

The manufacturer shall maintain a key duplication control system whereby authorization for duplication is mandatory. On completion, the Contractor shall provide a detailed "MASTER KEY CHART" showing the floor level, location, door number, cylinder type and key marking.

#### **6.16 Thermal Bridge (Where Specified)**

The thermal break shall be 9mm formed from a 15mm double flush polyamide strip.

#### **6.17 Weather strips (Where Specified)**

Weather-stripping shall be extruded ethylene propylene, neoprene or other plastic that remains flexible and non-sticky at ambient temperature.

#### **6.18 Cleaning**

After installation is complete and any surrounding work is substantially complete, the Contractor shall clean all units and lubricate all hinges / pivots and locks.

#### **6.19 On Completion**

On completion the Contractor shall supply all documentation related to the manufacturer's recommendations for cleaning and for ongoing maintenance of the units. All protective materials (eg. Peel-offs) shall be removed on completion. All glazed elements shall be cleaned to the satisfaction of the Project Manager.

#### **6.20 UV protection Film on external Glazing**

The installation of a UV protection film on all external glazing must have the following properties:

|                             |              |
|-----------------------------|--------------|
| Total Solar Energy rejected | min of 19%   |
| Glare Reduction             | min of 1.0 % |
| Ultra Violet Light rejected | 99%          |

## **7. MECHANICAL & ELECTRICAL TECHNICAL SPECIFICATIONS**

### **7.1 ELECTRICAL POWER AND LIGHTING SERVICES**

#### **7.1.1 Scope**

The scope of works includes the design, supply, installation and commissioning of an electrical power distribution, lighting and emergency lighting systems within the Archbishop's Curia, Floriana, as indicated in the relevant drawings, specifications and bill of quantities.

The successful tenderer will be expected to complete all works to a high standard of finish and to collaborate with management of the project so that the project is completed to the desired levels of workmanship.

This is a fixed price BOQ, so that contractor shall understand the full scope of the works and has to prove that the system being proposed is according to best practice and suitable for this project.

Works detailed in the specification include but are not limited to the following:

Supply and installation of electrical installation system.

- Design, supply, test and commission of electrical distribution system, lighting and emergency lighting system.
- Chase and make penetrations
- Supply and install canalisation
- Laying, pulling of cable
- Supply and install switchgear, services boxes and terminations
- Supply and install light fittings and accessories
- Supply and install main D/Bs and sub D/Bs
- Calibrate, set, test, commission and put in operation all related equipment
- Provide adequate training for the use and maintenance of equipment
- Handover systems

#### **7.1.2 Archbishop's Curia, Floriana Layout**

The facility shall consist mainly of archives and a study area where multiple fragile documents will be stored and employees will study and restore these documents. It shall include a study area for researchers and an archive area as well as offices on the side of the hall. The building services in the offices at the side are installed and works shall mostly be carried out in the hall.

The tenderer is expected to familiarise himself with the prospective site conditions to ensure that he understands the work area, and allows for provisions for health and safety, work policies and local council requirements.

#### 7.1.3 Electrical Power and Lighting

The electrical power and distribution system shall be installed, tested, and commissioned by an experienced electrical installation company, which shall employ an engineer, hereunder referred to as the Engineer, who shall certify the systems to be in compliance with the relevant specifications. The prospective contractor is to allow in the itemised BOQ to the fact that the works are to be done in coordination with other contractors.

Any services on the roof shall be clustered together and the maximum height above the roof level is limited to 1.0m.

The main DB already existing in the hall shall be used to supply all electrical requirements for the hall and adjacent offices. Since the main electrical DB is already fitted to supply power to the adjacent offices, the contractor shall inspect the services installed so as to make use of or replace the equipment in the DB as deemed necessary.

The design shall be based on the power and lighting drawings as listed hereunder;

- PE-11-196-18
- LE-11-196-18
- And related DB schedules.

#### 7.1.4 Electrical Supply

All equipment and any switchgear utilised throughout the installation shall be suitable for a 400 Volts three phase, 230 Volts single phase, +/- 10%, 3 phase 4 wire 50 Hz electrical supply. It shall comply with the related B.S. and E.U. Standards. The incoming electricity supply shall be three-phase, four-wire, 400/230 volts, 50Hz, neutral and earth system. All items making up the electrical installation, such as all equipment, motors, light fittings, control gear, accessories, switchgear, etc. shall be rated to operate at these voltages accordingly.

#### 7.1.5 Builder's Work

The Tenderer is to allow in the rates quoted, unless otherwise specifically requested in the Bill of Quantities, for all chasing, holes in reinforced concrete or structural members, (subject to the approval of the Architect/Consultant), penetrations in walls, pipe sleeves, drains and other relevant builder's work necessary for the proper execution of works.

The tenderer shall also allow for the making good of all chases in walls and holes in concrete with a 2:1 sand/cement mixture, or other grout repair material, allowing a 3mm recess for final finish by others.

#### 7.1.6 Temporary Electrical Installation

Any temporary electrical installation on the site shall meet the requirements of the IEE Regulations for Electrical Installations, and REWS regulations. In particular, IEE Regulations paragraph 604, and specifically:

604-03, Protection for Safety;

604-04, TN System – (an IT System of supply shall not be used);

604-08-03, Provision of RCD;

604-09, All temporary switchgear must be IP55;

604-10, No wiring system shall have strain placed on the termination of conductors; No cable shall be run across access roads where cranes and other earth- moving equipment shall be passing;

and 604-11, Isolation and switching;

Any temporary electrical installation shall be certified by a B Licensed electrician or by a warranted electrical engineer every 3 months and the certificate shall be affixed in a prominent position next to the Main Temporary Switchboard. A copy shall be handed over to the Client, at least one week before the expiration of validity of the previous certificate. Failure to comply, or to update this certificate, will lead to an automatic penalty of €100 per day. The certificate must clearly confirm that the site temporary installation complies with the requirements of the IEE Regulations, and in particular Section 704 of the same regulations.

The temporary supply panel shall incorporate:

- A main isolator 63A TP
  - 3 phase RCD rated 32A 4 pole 30mA
  - One 20A 4-pole 30mA shall be wired up to a 3 phase socket having 3p+N+E, rated 16A. The socket shall be interlocked with switch.
  - Three 16A 2-pole 30mA RCD/RCBO shall be wired up to a single phase socket (2p+E).
- The enclosure shall be protected to IP66 and IK09 and shall comprise a plastic body and cover, stainless steel screws, double mechanical interlock and cable glands. Sockets shall be rated IP44 and IK08 and shall comply with EN50102, self-extinguishing 8500C.

#### 7.1.7 Electrical Power Installation

The electrical installation shall be carried out according to the latest IEE Regulations and according to REWS regulations. Installations shall be continuously supervised by a competent and qualified person or persons in possession of REWS Wireman's Licence B.

The contractor shall be responsible for the installation using the specified materials in this document.

The contractor shall coordinate with Enemalta for the supply cable and meter, the location being indicated in the drawings.

All cable installations shall be carried out in ducts, prepared and reinstated by the contractor, in trenches according to drawings. Inspection boxes and manholes shall be included to allow easy access for replacement of cables in the future if necessary.

- Installations shall be carried out according to drawings provided in this tender document.

- Electrical installations shall be carried out according to IEE regulations and Enemalta requirements.
- Materials used shall all be CE marked, besides being in accordance to other specified standards.

## 7.2. References

The following reference documents are understood to form part of the specifications, to ensure compliance with local regulations.

- a. The current edition of the Electricity Supply Regulations, as issued by the REWS.
- b. The current edition of the I.E.E. Wiring regulations, BS 7671:2008, as issued by the Institution of Engineering and Technology.
- c. British Standards

## 7.3. Submittals

### 7.3.1 Tendering Stage

The tenderers are requested to include technical data sheets which make reference to description and model number of the item being offered. Failure to submit such information may lead to rejection of the offer.

### 7.3.2 After Award of Tender

The contractor shall submit all relevant literature for approval prior to purchasing any equipment or materials for this project. This literature shall include CE marking or certificates of compliance or third-party certification from renowned approving bodies, while all suppliers shall be ISO 9001 certified or equivalent.

The consultant shall reserve the right to inspect any equipment or materials as submitted by the contractor during the review stage of the relevant submittal including the major equipment, even if this includes overseas supplier's visits. Any related costs shall be understood to be included in the price.

The engineer shall approve and submit to the consultant, who shall in turn give his consent to proceed with the installation, as soon as possible upon his satisfaction, the installation drawings, detail drawings and full engineering calculations of all systems concerned.

The engineer shall also hand over a quality manual which shall include, organisation chart, function of employees directly or indirectly involved in the project, safety procedures, method statements for the installation, for inspection, for testing and commissioning, complete with all standard inspection and test sheets before commencing the related works. Prior to handover of any sub system, the engineer shall approve the "As Fitted" drawings together with all necessary documentation as detailed in the reference documents.

Before handover of any sub system, the engineer shall submit the final certificate, and 3 originals or the following

- Approved "As Fitted" drawings, scale 1:100, A1 size
- documents for handing over as specified
- Safety, function and commissioning tests and results
- Operation and Maintenance manual



Note: Any detail drawings shall be according to a reasonable scale.

All drawings submitted shall also be in soft copy, ACAD version, while, where possible, all handed over documents shall also be in soft copy.

#### 7.4 Material and Equipment

All installation equipment, material and components shall be of uniform design, similar parts interchangeable throughout all the project.

All external fittings and accessories fitted on the exterior of the building or which may be exposed to wet ambient conditions shall be weatherproof, at least IP65, IK08 and corrosion proof stainless steel AISI 316 back boxes.

##### 7.4.1 Luminaires Employing Fluorescent Tubes

Fittings employing fluorescent tubes, shall only employ T 5 tubes of the colour specified employing high frequency ballasts, have negligible noise level and fabricated from high quality materials in accordance with BS 4533 and IEC 570.

- Excellent economy and efficiency with a luminous efficacy exceeding 80lumens / watt.
- Good lumen maintenance exceeding 90% throughout the service life time of the lamp.
- Average lifetime 24,000 hrs
- Service life 19,000 hrs
- Good colour rendering group I B (Ra80....89)
- Energy efficiency class A+.

Ballasts shall have the following characteristics:

- Automatic restart after lamp replacement.
- Suitable for supply voltage of 230V +-10%.
- Suitable for a supply frequency of 50Hz.
- Provide lamp start with optimum preheating.
- Shall have energy efficiency index EF1: A2BAT.
- Shall have automatic shut down of defective lamps at end of life.

##### 7.4.2 Luminaires Employing LEDs

Light fittings employing LED sources shall comply with:

- IEC/PAS 62717 Performance requirements - LED modules for general lighting.
- IEC/PAS 62722 Performance requirements - LED luminaires for general lighting.

All LED lights shall have a guarantee of 5 years which guarantee shall also apply to the light source.

Fitting components shall comprise:

- LEDs and SMDs shall be high efficiency, reliable and robust, ROHs compliant and designed for applications requiring higher brightness. LEDs must be manufactured by an established and reputable manufacturer.

- LED drivers shall have protection class II with short circuit breaking with automatic restart, built in strain relief and terminal cover, over temperature protection and suitable for 230V (+/- 10%), 50Hz supply.

#### 7.4.3 Light Fittings

- The Contractor shall include for the supply, installation, connection, testing and commissioning of the new lighting installation, to the positions as indicated in the tender drawings.
- Louver's (where appropriate) shall be handled at all times using cotton gloves to avoid grease deposited on the louver surface. Any deposits on the louver surface to be removed using proprietary cleaner and a soft clean cloth.
- All luminaires shall incorporate high frequency control gear, unless otherwise stated.

All accessories shall have a tape label attached to them indicating the final circuit they are connected to.

- On completion of works, it is the contractor's responsibility to ensure that the installation conforms with all such requirements and in particular the BS 5266-2:1998 Code for Exterior Lighting.
- Lighting fixtures shall comply with the relevant British Standard Specifications or equally approved standards and shall be supplied complete with diffusers, shades, louvers, reflectors, tubes, lamps internal wiring, brackets, fixings and all necessary control gear including transformers, power factor correction and interference suppression devices and all accessories as specified or indicated in the Tender Documents. All lighting fixtures shall be the product of reputable manufacturers and shall be located, neatly fixed, wired and connected as specified or indicated in the Tender Drawings. The Tenderer shall allow for the supply, assembly, fixing, wiring, connecting and commissioning of all lighting fixtures in his Tender Price. {All LED fixtures supplied under this Contract shall, unless not be feasible, be the product of a single manufacturer and shall comply with BS 4533, IEC 570 or other equally approved standard.}
- Lighting fixtures shall be balanced according to the total power requirement, across the phases of the three-phase supply. These lighting fixtures shall be suitable for operation from a 240V, 50Hz supply and shall be provided with heat resistant internal wiring.
- All LED tubes, floodlights and lamps shall be of a colour appropriate to the areas covered by the fixtures - selection of colour temperature varies from 200/2700/3000 Kelvin and with a minimum colour rendering Index of greater than 80, unless otherwise in the Schedule of Luminaires and according to BS 5266-2:1998 Lighting requirements for outdoors.
- All LED lighting fixtures shall be power factor corrected according to current Enemalta requirements and shall have associated energy-saving control gear.
- All lighting fixtures specified, listed or indicated in the Tender Documents shall be supplied, installed, tested and commissioned by the Contractor.
- Light fittings are also to be approved by the architect in respect to fixture design and colour.

##### 7.4.3.1 Type A

Surface for ceiling mounting LED luminaire with slim profile, body aluminium, dimmable control gear, having the following dimensions 597mm x 597mm for ceiling mounting, 30 W (3,000 lumens

minimum), including all electronic control gear. The colour temperature should lie between 4,000 K and 5,000K for the archives and study area. A minimum product life time of 50,000 hours is also to be guaranteed. The enclosure is to be rated at least IP 20, IK 03, and be of zero maintenance type. A beam angle of at least 120° is considered an asset.



#### 7.4.3.2 Type A (E)

Surface for ceiling mounting LED luminaire with slim profile, body aluminium, dimmable control gear, having the following dimensions 597mm x 597mm for ceiling mounting, 30 W (3,000 lumens minimum), including all electronic control gear. The colour temperature should lie between 4,000 K and 5,000K for the archives and study area. A minimum product life time of 50,000 hours is also to be guaranteed. The enclosure is to be rated at least IP 20, IK 03, and be of zero maintenance type. A beam angle of at least 120° is considered an asset.

Luminaire shall contain a sealed power pack (battery-charger-inverter) of nickel cadmium type, the luminaries shall be ICEL-approval and shall incorporate an LED charging status indicator. Luminaries shall switch to emergency mode automatically in event of power failure.

#### 7.4.3.3 Type C and C(E)

Suspended mounting pendant LED luminaire housed in aluminium body, dimmable control gear, dimension of 340mm diameter by 140mm x 485mm 30 W (3,000 lumens minimum), including all electronic control gear. The colour temperature should lie between 4,000 K and 5,000K for the archives and study area. A minimum product life time of 50,000 hours is also to be guaranteed. The enclosure is to be rated at least IP 20, IK 03, and be of zero maintenance type. A beam angle of at least 120° is considered an asset.

Type C(E) luminaire shall also contain a sealed power pack (battery-charger-inverter) of nickel cadmium type, the luminaries shall be ICEL-approval and shall incorporate an LED charging status indicator. Luminaries shall switch to emergency mode automatically in event of power failure.



#### 7.4.3.4 Type H(E)

Maintained ceiling-mounted emergency luminaire with LED lamp for emergency illumination, having a rust protected sheet steel body with neatly mitred corners finished in white coloured thermosetting epoxy primer paint equipped with a high gloss aluminium louvers fitted with anodised aluminium transverse blades. The fitting shall be furnished complete with LED lamp, inverter, control gear and suitable nickel-cadmium rechargeable battery to provide and autonomy of 3 hours operation.

#### 7.4.4 Switches and accessories

Tumbler and dimmer switches shall be to EN 60669 (5A). Light switches shall be of the moulded white PVC type, suitable for flush mounting to wall. Lighting switches shall be housed in square or rectangular conduit boxes and supplied complete with fixing screws.

External switch enclosure shall be heavy duty durable polycarbonate with earth and loop terminal in the back box IP 66 to EN 60529. The switches shall be modular type preferably complete with a neon locator similar to picture. All termination to the enclosure should ensure an equivalent weather proof connection by means of water tight glands.

Double pole switches shall be illuminated with neon lamp and red diffuser and fused to BS 5733 and shall only be employed in conjunction with a separate flex outlet.

##### 7.4.4.1 Socket Outlets

These shall be either single or twin, rated 13A, complete with a double pole positive drive switch mechanism with a terminal capacity of 4 x 2.5 sq mm and incorporating safety shutters allowing opening of phase and neutral pins when earth pin is present, 3mm minimum contact gap and silver contacts and ON clearly marked on switches. The sockets shall be manufactured in accordance with BS 1363:1984. These shall be mounted on flush type conduit boxes, 35mm deep complying with BS 4662.

External double socket outlet enclosure shall be heavy duty durable polycarbonate with earth and loop terminal in the back box IP 66 to EN 60529. The socket outlets shall be 13A switchable modular type to BS 1363:2. All termination to the enclosure should ensure an equivalent weather proof connection by means of water tight glands.

#### 7.4.5 Cable Canalisation

##### 7.4.5.1 PVC Trunking / Conduit

PVC trucking and conduits shall be self-extinguishing type to BS 4607 and BS 6099.

PVC trunking is to be installed with all fittings and fixtures, like tees, bends, lids, separators etc. shall be proprietary accessories. PVC conduits shall be heavy gauge complete with adequate fittings which shall be secured with PVC glue and proper adaptors to boxes. Surface installation of PVC conduits is allowed above the false ceilings, otherwise these shall be chased in walls. Bending of PVC conduits shall be made properly and deformed bends will be rejected.

Any underground canalisation for cables in external areas, shall be PVC drain pipes or conduit, covered with masonry slabs, signal tape and lean mix to close the trench.

##### 7.4.5.2 Galvanised steel trunking, trays and conduits

Surface electrical canalisation, for plant room area, external and as directed, shall be made out of either galvanised steel trunking on galvanised steel conduits and fittings. The trunking shall

be at least 1mm thick, hot dipped galvanised plate. The lid shall be secured with self-tapping screws and on no account is the length of the lid to exceed 1.8m in on whole section.

All trunking shall be joined by sleeve couplers via 6mm stainless steel bolts, nuts and spring washers. If trunking is not fixed as detailed above, a separate copper earth shall be bridged from one trunking length to another. This shall be terminated by stainless steel bolts and nuts using spring washers.

Steel trunking must be supported on steel brackets as given below:

| Trunking Size | Minimum Spacing between supports (mm) |          |
|---------------|---------------------------------------|----------|
|               | Horizontal                            | Vertical |
| 50X50mm       | 1750                                  | 2000     |
| 75x50mm       | 2000                                  | 2500     |
| 75x75mm       | 2000                                  | 2500     |
| 100x75mm      | 2500                                  | 3000     |
| 200x100mm     | 2500                                  | 3000     |
|               |                                       |          |

Trunking shall be additionally supported at all bends, tees, etc.

External installation shall also be in galvanised steel conduits and shall be watertight throughout the installation and lids sealed with silicon. If flexible galvanised steel conduit is required to connect to other electrical equipment this shall also be water tight. In either case a separate earth wire is required for proper connection.

Boxes, tees, etc shall be complete with fly over separation units in accordance with IEE regulations. ELV trunking shall have internal separators to segregate different systems especially for the fire alarm system.

Earth bonding is required across each length of trunking/tray and any metal boxes. Splices shall be used to join each section of the tray and to the facility grounding system every 30m to retain a low potential to ground and provides a continuous path to stray currents.

Bends, tees and cross offs shall be manufactured by skilled workers, using good normal practice to ensure that sharp edges are avoided.

#### 7.4.6 Wiring

Cables shall be metre marked and shall conform to the following specifications:

Armoured cables shall be PVC/SWG/XLPE/PVS/copper conductor, low smoke zero halogen, to BS 7835, EN 60754-1, EN 60228

- Cable Manufacture

Use new cables, delivered on site with seals intact, manufactured no more than one year prior to delivery, labelled with manufacturer's name, size, description, BS number, classification, length, grade and date of manufacture.

- Standard Ordinary Flexible Wires - Single Copper Core Standard- BS 6004, Table 4(b), 5 and 12
- Standard LSF Flexible Wires - Single Copper Core Standard - BS 7211, Tables 3(B) and 4(b)
- Standard Heat resisting (95oC or more) Flexible Wires - Single Copper Core Standard - BS 6004, Table 11(b); BS 6007, Tables 5,8 and 10.
- Standard Ordinary Flexible Cords - Multi Copper Cores Standard - BS 6500, Tables 12, 13, 16 and 18; BS 7919 Tables 10 and 14
- Standard HOFR Flexible Cords - Multi Copper Cores Standard - BS 6007, Table 5; BS 6500, Table 16.
- STANDARD POWER SUPPLY CABLES, COPPER CONDUCTORS, THERMOSETTING INSULATION, SHEATHED  
Standard - BS 5467, Tables 4, 6, 8, 10 and 12.  
Mechanical protection - Unarmoured.
- STANDARD POWER SUPPLY CABLES, COPPER CONDUCTORS, THERMOSETTING INSULATION, SHEATHED AND ARMoured

Standard - BS 5467, Tables 4, 6, 8, 10 and 12.

Mechanical protection - Armoured.

- STANDARD POWER SUPPLY CABLES, COPPER CONDUCTORS, PVC INSULATION, SHEATHED

Standard - BS 6004, Tables 7 and 8; BS 7835

Mechanical protection - Unarmoured.

- STANDARD POWER SUPPLY CABLES, COPPER CONDUCTORS, PVC INSULATION, SHEATHED AND ARMoured

Standard - BS 7835

Mechanical protection - Armoured.

- STANDARD POWER SUPPLY CABLES, COPPER CONDUCTORS, LSF SHEATHED AND ARMoured

Standard - BS 6724, Tables 4, 6, 8, 10 and 12.

Mechanical protection - Armoured.

- LIGHT DUTY MINERAL INSULATED CABLES, THERMOPLASTIC OUTER COVERING

Standard - 500V light duty to BS 6207 Part 1, table 1.

Outer covering - Thermoplastic to BS 6207 Part 1, clause 7.2.

- LIGHT DUTY MINERAL INSULATED CABLES, LSF OUTER COVERING

Standard - 500V light duty to BS 6207 Part 1, table 1.

Outer covering - LSF material to BS 6207, Part 1, clause 7.3.

- CABLE GLANDS - UNARMoured CABLES, INDOORS

Cable type

Flexible; wiring and power; control and auxiliary; and communications.

Standard - BS 6121; Part 1, A1; Part 2, A1P.

Environment - Indoor.

- CABLE GLANDS - UNARMoured CABLES, OUTDOORS

Cable type

Flexible; wiring and power; control and auxiliary; and communications.

Standard - BS 6121; Part 1, A2; Part 2, A2P.

Environment - Outdoor and dairy areas.

- CABLE GLANDS - ARMoured CABLES, DRY INDOORS

Cable type

Wiring and power; and control and auxiliary.

Standard - BS 6121; Part 1, B; protection, W or Y.

Environment - Dry indoors.

- CABLE GLANDS - ARMoured CABLES, INDOORS

Cable type

Wiring and power; and control and auxiliary.

Standard - BS 6121; Part 1, D1; protection, W or Y.

Environment - Indoor.

- CABLE GLANDS - ARMoured CABLES, OUTDOORS

Cable type

Wiring and power; and control and auxiliary.

Standard - BS 6121; Part 1, E1; protection, W or Y.

Environment - Outdoor, dairy areas.

- CABLE SEALS AND GLANDS - HEAVY OR LIGHT DUTY MINERAL INSULATED CABLES - TEMPERATURES UP TO 105°C

Use seals and glands for mineral insulated cables in accordance with BS 6207 Part 2, recommended or supplied by cable manufacturer.

Gland Type - Cable grip type, externally threaded with lock washer and nut.

Gland Shroud - Thermoplastic or LSF material to match sheath.

Seal type - Plain or earth tail and self-threading pot.

Pot closure - Plastic stub cap.

Pot sealant - Compound, 105°C

Conductor insulation sleeving - Plain PVC.

Seal maximum temperature rating - 105°C.

#### 7.4.7 Distribution Boards

- The lighting and power distribution equipment will consist of miniature circuit breaker boards (MCB's or RCBO's). Each board will comply with and be tested to BS EN 60439-1 or BS EN 60439-3 and should have a minimum of 25% spare ways available upon completion of the project, with a minimum of two number TP&N spare ways.

- Enclosures will be constructed from rust protected sheet steel, with lockable cover doors. All live terminals and busbars will be fully shrouded and blanking pieces will be fitted to all spare ways.

- Miniature circuit breakers, busbars and integral switch will be mounted onto a completely removable internal panel assembly, which will be adjustable to enable correct alignment with the enclosure cover.

- Separate earth and neutral bars will be provided, which will each consist of separate terminals for each outgoing live terminal. Each distribution board shall be provided with Surge protection, if applicable.

- The miniature circuit breakers will comply with BS 3871 Part 1.

- Permanent fixed circuit labels and charts will be provided inside the plant room. The distribution charts will provide the following information for each outgoing way:

- o Key Name

- o Cable size/CPC size of connected circuits

- o Miniature circuit breaker type and rating

- o Equipment/ Area served

- o Circuit/ Phase Designation

- o Supply Cable type

- o Supply origin

- Final circuit protection is to be afforded by a system of MCB's having a minimum M16 category of duty and characteristics suitable for each application, ie.:

- o Type B - small power circuits (Non-inductive)

- o Type C - Lighting and lightly inductive loads

- o Type D - Transformers, Motors, etc.



- The distribution boards and section boards shall be recessed mount, front access, with zinc coated sheet steel enclosures, enamel gloss paint finish, hinged, gasket access doors and employing MCB's /MCCB's as appropriate. All distribution boards/section boards are to be complete with the following:
  - o Integral main isolator and RCD (sized as appropriate)
  - o 3 No. Phase indicator lamps (red) to BS EN 60073
  - o Warning/identification/instruction labels
  - o Identification/Reference labels
  - o Unique reference no.
  - o Supply point and location
  - o Supply cable size and type
  - o "O" ring markers on each cable termination (phase, neutral and earth) indicating the way number and phase
  - o Lockable covers fitted with barrel locks/keys
  - o Terminal kits and cable boxes as necessary to accommodate the number, type and size of cables provided.
  - o A card circuit chart, protected by a Perspex cover to be fitted to the inside of each distribution board access door. This is to contain typed information relating to the outgoing circuits and including circuit reference MCB rating, cable type and size, supply location and general circuit details.
  - o The distribution boards are to be located as indicated on the drawings where spare ways are indicated in the distribution board schedules, they shall be complete with blanks.

#### 7.4.8 MCCBs, MCBs and RCDs

All switchgear and protection devices, namely RCD's, MCCB's, MCB's etc. shall be supplied from the same manufacturer, CE marked, and shall be of international repute. All Switchgear and Protection devices shall be rated so as to have a proper discrimination in the electrical distribution system.

The miniature circuit breakers (MCB) shall be of high impedance quality, complete with thermal magnetic overload unit inside the breaker and shall operate on both overload and short circuit condition. Category of duty; C Curve, breaking capacity 6kA for general circuits and category of duty; D curve breaking capacity 10kA for inductive circuits supplying motor loads.

A safety 'off' lock mechanism must be a feature of the miniature circuit breakers.

Moulded case circuit breakers (MCCB) shall be rated as specified in the drawing, having a rated ultimate short circuit breaking capacity (Icu) of not less than 36 kA or 50kA for 1 second at 400 volts, as will be specified for each particular project.

RCDs shall be to IEC 60755 and type A, and break time G for instantaneous tripping.

#### 7.4.9 Earthing and Bonding

The Contractor shall design, supply, install and test the earthing of all exposed metalwork, structural steel, gas and water service metal work to the earthing termination at the intake position in accordance with the IEE Regulations, BS7430 and BS7671.

The Contractor shall be responsible for ensuring that the complete system of conduit, trunking, etc., together with all accessories will have sufficient metallic connection to ensure earth continuity throughout the entire installation.

#### 7.4.10 Photo luminescent Exit Signage

Photo luminescent rigid, plastic at least 2mm thick, exit signs to ISO 17398:2004 and to European Council Directive 92/58/EEC. The signs shall have at least the minimum luminance as per measurement criteria of DIN 67510-1m with antistatic and easy to clean surface. The painting shall be serigraphy, high quality gloss paint with UV resistance and a 5-year guarantee. The paint shall be non-radioactive, non-phosphorous, lead free and non-toxic.

The minimum dimensions shall be 300mmx150mm for short range viewing, while large sizes may be required as indicated on the drawings.

#### 7.5. Installation

- Wall trenching works shall preferably be affected with a slotting machine (fekruna). Trenches shall be straight, vertical or horizontal. Trenches shall be filled with mortar and limestone and finished to the satisfaction of the architect in charge.

- All workmanship shall be of a high standard and shall be fully compliant with the relevant British Codes of Practice, Local Standards and Regulations, or equally approved standards. In addition to compliance with the relevant standards, the REWS Electricity Supply Regulations, and the IEE Regulations, the entire Electrical Services Installation covered under this Contract shall also satisfy the Consultant Engineer's requirements as regards to the finish and general appearance.

The Contractor shall comply fully with Health and Safety Rules and Regulations, shall be held responsible for the safety of his employees, any other employees as well as the general public. The contractor shall be held responsible for any damage incurred to Third Parties, caused by him or his employees. All works shall be carried out by competent and licensed tradesman.

##### 7.5.1 Electrical Wiring

- Wiring for small power, socket outlets and final lighting sub-circuits shall consist of multiple core copper cables having high conductivity conductors, PVC insulated with a voltage grade of 450V/750V, manufactured to BS 6004. Unless otherwise specified or indicated in the Tender Drawings, wiring shall be drawn into concealed, medium gauge high impact, rigid, PVC (plastic) conduit and heavy gauge PVC (white) trunking and mesh tray. Single-strand cable conductors shall not be used.

- The minimum size of wiring used shall not be less than 1.5 mm<sup>2</sup> for lighting circuits and 2.5 mm<sup>2</sup> for power circuits. Larger conductors shall be used to prevent voltage drops exceeding the limits specified by the IEE Regulations.

- A protective (earthing) conductor consisting of a single-core PVC insulated multi-strand cable coloured green-yellow shall be provided with every final sub-circuit and run in the relevant PVC conduit of trunking in order to provide the necessary earth-continuity. The size of the earth-continuity conductor shall be in compliance with the IEE Regulations but in any case, conductors smaller than 2.5 mm<sup>2</sup> shall not be used for this purpose.

- The method of looping-in wiring shall be used with loop connection being made only at the terminals of accessories or fittings. Socket outlets shall generally be wired in "ring-main" or "radial" circuits unless otherwise specified or indicated in the Tender Drawings.

- The number of cables run in any part of the conduit or trunking system shall not exceed the limit permitted by the IEE Regulations.

- The Contractor shall terminate all wiring in the fitting, accessory, outlet or other equipment specified in the Tender Drawings or as directed by the Engineer. A suitable length of slack cable shall be left at all points of connections to accessories, light fittings and other equipment.

- The termination of single-core cables shall be carried out as follows:

- o 1.5 mm<sup>2</sup> - the strands twisted together and then doubled back to present a double thickness
- o 2.5 mm<sup>2</sup> to 16mm<sup>2</sup> - the strands shall be crimped using a proper sized connector relative to the cable size. The crimp method shall involve two crimps, one on the insulation for a stronger mechanical connection and one on the conductor or shield for a good electrical connection. The crimp shall be carried out with a crimp tool specifically designed for this type of termination and not pliers.

• For identification purposes all single-core PVC Cables shall generally be colour coded with red, yellow and blue reserved for phase (line) conductors, black for the neutral conductor and green-yellow for the protective (earth-continuity) conductor. The new European colour coding may also be used, subject to this being used in the whole project. Partial use of one type of colour coding shall not be accepted.

Flexible fine stranded wiring cables shall be suitably terminated with lugs or soldered. The Contractor is responsible for cable conductor phasing from the main switchboard to the individual distribution boards and switchgear. Armoured cables shall be terminated with a proper gland complete with earth lugs and shroud for a sound installation.

When cable tray is used the cables shall be secured by cable ties every 2.5m. Cleated armoured cable shall also be secured every 1.0m in a horizontal run and every 2.5m in a vertical run.

#### 7.5.2 Bonding of Metal Fixtures

All metallic fixtures of the building that may come in contact to a live supply, are to be properly bonded to earth, as stipulated by the I.E.E. Regulations. These metallic units may include, but are not limited to, building structures, stairs handrails, metallic or aluminium partitioning, metal pipe work, fixed workshop benches etc. These shall be taken to be included in the BOQ rates.

#### 7.5.3 Wiring Accessories

- Unless otherwise specified, all wiring accessories shall be white in colour and all outlet boxes shall be recessed. All 13A single and twin socket outlets shall be of the independently double pole switched type to BS 1363.
- Control fittings shall be fixed at a height above the finished floor level as follows:
  - o Light switches 1.1 m
  - o Power socket outlets 0.6 m
  - o High-level power outlets 1.9 m
- However, all the above dimensions are to be confirmed by the Engineer prior to commencement of works.
- Plugs and socket-outlets or low voltage circuits shall comply with BS 553.1 Table 55.1

### 7.6. Fire Integrity Circuits

#### 7.6.1 Fire Integrity Isolators

All items of plant which are expected to carry on in operation during a fire shall be wired via a fire rated isolator Class F300 (300oC for 60 minutes). This shall be able to maintain power during a fire and shall be mounted close to the item controlled. These shall comply with the thermal requirements of EN 12101-2003. They shall be housed in a heavy duty die cast sheet

steel/aluminium enclosure that can be padlocked in both ON and OFF position. The specified rating shall be based on category AC23 on an operational voltage of 400V. They shall have positive mode contacts and enclosure protection to IP65, finished in RAL 3020 traffic red colour. They shall have a conditional short circuit current exceeding 35KA and a minimum of 500,000 mechanical switching operations.

#### 7.6.2 Fire Integrity Cables

All items of plant which are expected to carry on in operation during a fire shall be wired via fire integrity cable. Cables shall have plain annealed stranded copper conductors, with mineral ceramic fire-resistant tape, extruded LSOH bedding compound, complying with BS6387 Category CWZ (Fire Resistant) and EN60332-1-1 and EN50266-2-4 (Fire Performance). All cables shall be fixed to cable trays or to the wall via metallic fire-resistant cleats. All glands shall be manufactured incorporating material which shall be suitable for use with this cable.

### 7.7. Labelling

#### 7.7.1 Labelling of MCB and Distribution Board List

All distribution boards, MCB's, isolators and all final points, shall be clearly labelled to indicate clearly the circuit name. The distribution boards shall also contain a schematic drawing, affixed to the door of the DB, showing all circuits as fitted, showing MCB current rating, and circuit name and cable size it is feeding.

#### 7.7.2 Labelling of cables

Each multicore cable has to have a cable identification tag at every 10 metres of its length and within 1 metre of its termination at both ends at the switchgear. The tag is to identify both the Main Switchgear Panel at the source and the switchgear at its termination.

### 7.8. List of limits

The electrical contractor shall proceed with his scope of works as per the following details when connecting to other services.

**All other works related to the electrical installation not detailed in the hereunder or not specifically listed in the BOQ, shall be carried out by the electrical contractor and shall be assumed to be included in the unit rates.**

#### 7.8.1 Site Coordination

The mechanical contractor shall liaison with the electrical contractor, if different, for the coordination of installation of services and equipment on site to ensure proper access for the installation and maintenance.

#### 7.8.2 Electrical Supplies to Pumps and equipment

The mechanical contractor, if different, shall coordinate with the electrical contractor on the exact final location, type and size of electrical supply points.

### 7.9. Inspections, Testing and Commissioning

- All the works provided as part of the contract shall be inspected and commissioned in accordance with the relevant European Standard Specifications to the satisfaction of the Consultant Engineer.
- All installations shall be inspected and tested in sections as the works proceeds and on completion as a complete system. It shall be noted that the Consultant Engineer may require

inspecting and/or testing any equipment during installations. All tests shall be arranged in co-operation with the Consultant and shall be given prior notice of the time, location and nature of the test. No test shall be considered valid unless the Consultant or his approved representative is present for the tests.

- Any defects that emerge and found at any time during the test duration shall be amended and a complete re-test shall be carried out, all at no cost to the client but costs shall be fully borne by the contractor.
- No section of the works shall be in any way concealed prior to testing and inspection and written and documented approval by the Consultant Engineer or his approved representative.
- The services rendered under this contract exclude:
  - o Any labour cost or parts required as a result of damages caused by accidents, fire, flood, lightning strikes and any other acts of God, neglect, misuse, malicious act, act of violence, environmental conditions outside those specified for or caused by the contracted equipment, electrical current fluctuations not caused by the contracted equipment.
  - o Any maintenance work required due to the use of supplies not approved by the contractor or equipment manufacturer.
  - o Replacement of consumable items.

The client shall be informed at least one week before any wire testing, safety testing, function testing, or commissioning is carried out. The contractor's engineer holding a warrant shall approve the test certificates and final commissioning certificates and invite the consultant/client to witness such tests; however, the latter has the right to request further tests as deemed necessary.

Tests include but not limited to the following.

Continuity

Insulation resistance between all conductors

Polarity Verification

RCD test

Earth loop impedance

#### 7.10. Instructions to Employer's Staff

The employer's staff will be instructed in the operation and maintenance of the installations by qualified personnel, who shall be fully conversant with the operations and maintenance procedures required for all related items of plant and composite systems, and where necessary specialist sub-contractor staff shall be made available to enable complete instructions to be given. The competence of the trainer and the quality of the presentation shall be to the satisfaction of the Consultant Engineer.

All installations shall be demonstrated in full working order together with the procedures to be adopted in the event of plant or system malfunction and the manner in which plant outputs or control settings can be adjusted

#### 7.11. Operation and Maintenance Manuals

On completion of all the works and prior to handing over, the Contractor, shall provide three (3) copies of the complete set of Operating and Maintenance Manuals comprising the details hereinafter mentioned. The manual shall include general description of the installation, indicating the manner of working of each system, forming part of the works.

It shall also detail full instructions for starting up, operating and shutting down each individual assembly of the equipment. Instructions as to the frequency and full requirements of routine and regular preventative maintenance necessary to maintain the equipment in a good working

condition shall also be included. This information is to be supplemented by the Manufacturer's Maintenance Instructions for each assembly part of the equipment.

Attached to the manual there shall be a recommended list of spare parts, including manufacturer's address and local stockist/agent as well as wiring diagrams of the system and equipment.

#### 7.12. Tender Drawings and Schedules

The following drawings and documents are deemed to be an integral part of this document:

| Drawing Title                          | Drawing No   |
|----------------------------------------|--------------|
| Electrical Power and Lighting Services |              |
| Electrical Power Plan                  | PE-11-196-18 |
| Lighting Plan                          | LE-11-196-18 |
| Fire Safety Plan                       | FS-11-196-18 |

#### 7.13. List of literature to be submitted with tender

The list of literature below is deemed to be the minimum accepted literature submittal in order to comply with the requirements of the tender. Tenderers are to give the exact supplier product reference number in the appropriate column and the corresponding item number to be shown on the literature attached.

**Failure to provide such information may lead to the tender being rejected.**

| Item   | Description                   | Reference in Technical Specifications | Supplier reference No |
|--------|-------------------------------|---------------------------------------|-----------------------|
| 7.13.1 | Light fittings, all types     | 7.4.3                                 |                       |
| 7.13.2 | Switches, socket outlets, PVC | 7.4.4                                 |                       |
| 7.13.3 | Distribution boards           | 7.4.7                                 |                       |
| 7.13.4 | MCB, RCD, RCBO                | 7.4.8                                 |                       |
|        |                               |                                       |                       |

## **8. EXTRA LOW VOLTAGE SERVICES**

### **8.1.1 Scope**

The scope of works includes the design, supply, installation and commissioning of a the ELV services, namely fire alarm, CCTV, public address and data within the Archbishop's Curia, Floriana as indicated in the relevant drawings, specifications and bill of quantities.

The successful tenderer will be expected to complete all works to a high standard of finish and to collaborate with management of the project so that the project is completed to the desired levels of workmanship.

This is a fixed price BOQ, so that contractor shall understand the full scope of the works and has to prove that the system being proposed is according to best practice and suitable for this project.

Works detailed in the specification include but are not limited to the following:

Supply and installation of the following ELV systems.

- Design, supply, test and commission of fire alarm, CCTV, and data.
- Chase and make penetrations
- Supply and install canalisation
- Laying, pulling of cable
- Supply and install terminations, accessories, services boxes and fixtures
- Supply and install devices, faceplates and components
- Supply and install main control panels, repeaters, and software
- Calibrate, set, test, commission and put in operation all related equipment
- Provide adequate training for the use and maintenance of equipment
- Handover systems

### **8.1.2 Archbishop's Curia Layout**

The facility shall consist mainly of archives and a study area where multiple fragile documents will be stored and employees will study and restore these documents. It shall include a study area for researchers and an archive area as well as offices on the side of the hall. The building services in the offices at the side are installed and works shall mostly be carried out in the hall.

The tenderer is expected to familiarise himself with the prospective site conditions to ensure that he understands the work area, and allows for provisions for health and safety, work policies and local council requirements.

### **8.1.3 Extra Low Voltage systems**

The ELV systems shall be designed, installed, tested, and commissioned by an experienced ELV installation company, which shall employ an engineer, hereunder referred to as the Engineer, who shall certify the systems to be in compliance with the relevant specifications. The prospective contractor is to allow in the itemised BOQ to the fact that the works are to be done in coordination with other contractors.

The design shall be based on the ELV drawings ELV-11-196-18, FD-11-196-18, FS-11-196-18 and related schematics and details.

#### 8.1.4 Electrical Supply

All equipment and any switchgear utilised throughout the installation shall be suitable for a 400 Volts three phase, 230 Volts single phase, +/- 10%, 3 phase 4 wire 50 Hz electrical supply. It shall comply with the related B.S. and E.U. Standards. The incoming electricity supply shall be three-phase, four-wire, 400/230 volts, 50Hz, neutral and earth system. All items making up the electrical installation, such as all equipment, motors, light fittings, control gear, accessories, switchgear, etc. shall be rated to operate at these voltages accordingly.

#### 8.1.5 Builder's Work

The Tenderer is to allow in the rates quoted, unless otherwise specifically requested in the Bill of Quantities, for all chasing, holes in reinforced concrete or structural members, (subject to the approval of the Consultant), penetrations in walls, pipe sleeves and other relevant builder's work necessary for the proper execution of works.

The tenderer shall also allow for the making good of all chases in walls and holes in concrete with a 3:1 sand/cement mixture, allowing a 3mm recess for final finish by others.

#### 8.1.6 Temporary Electrical and Fire Safety Installation

Any temporary electrical installation on the construction site shall meet the requirements of the IEE Regulations for Electrical Installations, and Enemalta regulations. Please refer to the electrical section for further details.

For fire safety the building site shall be in conformity to local legislation and in conformity to the Regulatory Reform (Fire Safety) Order 2005 (FSO) sets out the construction site general fire safety. The FSO requires that a 'responsible person' must carry out, and keep up to date, a risk assessment and implement appropriate measures to minimise the risk to life and property from fire. The responsible person will usually be the main or principal contractor in control of the site.

The responsible person should identify sources of fuel and ignition and establish general fire precautions including, means of escape, warning and fighting fire, based on the fire risk assessment.

In occupied or partially occupied buildings, it is ensured that the works do not interfere with existing escape routes from the building, or any fire separation, alarms, dry risers, or sprinkler systems.

Any temporary fire safety certificate shall be issued by a competent person every 3 months and the certificate shall be affixed in a prominent position next to the main entrance. A copy shall be handed over to the Client, at least one week before the expiration of validity of the previous certificate. Failure to comply, or to update this certificate, will lead to an automatic penalty of €100 per day. The certificate must clearly confirm that the site temporary installation complies with the requirements of the specified regulations.

#### 8.1.7 Electrical Power Installation

The electrical installation shall be carried out according to the latest IEE Regulations and according to Enemalta regulations. Installations shall be continuously supervised by a competent and qualified person or persons in possession of REWS Wireman's Licence B.



The contractor shall be responsible for the installation using the specified materials in this document.

All cable installations shall be carried out in ducts, prepared and reinstated by the contractor, in trenches according to drawings. Inspection boxes and manholes shall be included to allow easy access for replacement of cables in the future if necessary.

- Installations shall be carried out according to drawings provided in this tender document.
- Electrical installations shall be carried out according to IEE regulations and Enemalta requirements.
- Materials used shall all be CE marked, besides being in accordance to other specified standards.

## 8.2. References

The following reference documents are understood to form part of the specifications, to ensure compliance with local regulations.

- a. The current edition of the Electricity Supply Regulations, as issued by the Enemalta, REWS.
- b. The current edition of the I.E.E. Wiring regulations, BS 7671:2008, as issued by the Institution of Engineering and Technology.
- c. British Standards

## 8.3. Submittals

### 8.3.3 Tendering Stage

The tenderers are requested to include technical data sheets which make reference to description and model number of the item being offered. Failure to submit such information may lead to rejection of the offer.

### 8.3.4 After Award of Tender

The contractor shall submit all relevant literature for approval prior to purchasing any equipment or materials for this project. This literature shall include CE marking or certificates of compliance or third-party certification from renowned approving bodies, while all suppliers shall be ISO 9001 certified or equivalent.

The consultant shall reserve the right to inspect any equipment or materials as submitted by the contractor during the review stage of the relevant submittal including the major equipment, even if this includes overseas supplier's visits. Any related costs shall be understood to be included in the price.

The engineer shall approve and submit to the consultant, who shall in turn give his consent to proceed with the installation, as soon as possible upon his satisfaction, the installation drawings, detail drawings and full engineering calculations of all systems concerned.

The engineer shall also hand over a quality plan which shall include, organisation chart, function of employees directly or indirectly involved in the project, safety procedures, method statements for the installation, for inspection, for testing and commissioning, complete with all standard inspection and test sheets before commencing the related works. Prior to handover of any sub system, the engineer shall approve the "As Fitted" drawings together with all necessary documentation as detailed in the reference documents.

Before handover of any sub system, the engineer shall submit the final certificate, and 3 originals or the following

- Approved “As Fitted” drawings, scale 1:100, A1 size
- documents for handing over as specified
- Safety, function and commissioning tests and results
- Operation and Maintenance manual

Note: Any detail drawings shall be according to a reasonable scale.

**All drawings submitted shall also be in soft copy, ACAD version, while, where possible, all handed over documents shall also be in soft copy.**

#### 8.4. Fire Alarm and Evacuation System

##### 8.4.1. Design Concept of Fire Alarm and Evacuation System

The prospective contractor shall design, supply, install, test and commission an analogue addressable Fire Detection and Alarm System, as per specifications below and attached drawings. The equipment and installation shall comply with EN 54, BS 5839, Part 1, and EMC Directives, and LPCB approved. The prospective contractor shall hold an ISO 9001 covering the scope of supply above. The category of protection shall be classified as LI/PI and all areas.

##### 8.4.2 Material and Equipment Fire Alarm

The installation shall comprise of intelligent smoke detectors and intelligent heat detectors, high temperature heat detectors, addressable manual break glass units, addressable electronic sounders, addressable flashing beacons, and interface units to control and/or monitor other services. Interfaces shall monitor and control the respective equipment as required. All installed devices shall provide complete communication with the existing Advanced fire alarm panel which is situated at the Reception area.

Where indicated the equipment shall be true analogue addressable, or conventional and where possible supplied by the same manufacturer.

The devices should incorporate short-circuit isolators as required, at intervals of no greater than 20 devices and at the boundary of a fire compartment. Photoelectric/heat detectors, heat detectors and smoke detectors shall have interchangeable bases. The analogue photoelectric and heat detectors shall utilize a complex algorithm to minimize false alarms. All detectors shall be capable of transmitting a minimum of four levels of activity (fault, normal, pre-alarm and fire).

Electronic sounders shall be addressable type and integrated with the detection devices or separate. Weather proof sounders IP 65, and high dB sounders shall also be addressable type. All sounders shall be provided with the facility to adjust the output sound level.

The main fire alarm panels shall include, in the event of a mains failure, a 48-hour backup battery for normal operation and thereafter 30 minutes alarm in case of a fire condition. The calculation of the battery has to be provided by the contractor prior to the material submittal of the fire alarm panel. The main panel shall be equipped with an on-line printer interface and internal printer. Shall have the capability to be connected in a network with true peer-to-peer interface and cross over reporting. On the front door the main panel shall incorporate zone LED's as required for the premises.

The software should allow for isolation, test and on-site programming as well as display adjustments and printout facilities. All user functions should be programmable on-site both directly from the panel and from a PC, utilizing user friendly windows-based software. Programming shall be carried by a local competent installation company as per these specifications in liaison with the client. The main fire alarm panel and repeater panels shall identify the detection zones with a specific name of the area, and the device text which has

been triggered, as specified by the client. The sounders shall be identified by the area and the alarm zone as detailed below.

The wiring between the loop interface unit and the field equipment shall be monitored. Any wiring faults shall be reported to the main panel.

Fire alarm cable shall be to BS 6387:1994 PH 120 minutes, able to maintain circuit integrity under fire conditions throughout the installation. The cable shall comply with IEC 331 flame test and BS 4066 pt 1, be moisture resistant, fully screened against electrical interference, negligible acid gas emission, low smoke emission, 300/500 volts r.m.s. rating, red in colour.

#### 8.4.3. Installation

Wiring over 3m in height from the floor level can be clipped directly to the wall or slab, whilst, other cable should have additional adequate mechanical protection. Wiring through shaft shall either be secured to dedicated mesh tray or pulled through conduits. External surface wiring shall be pulled through metal galvanised conduit and terminations sealed to IP67.

Proprietary accessories shall be used when installing the cable and devices, such as terminations, clips, and other required cable installation materials. Each device shall be labelled by a unique address number, as per the drawing, and clearly visible.

The proposed system shall be supported by a local distributor, authorised by the original equipment manufacturer. The prospective contractor shall thereby guarantee full technical assistance; maintenance of the system as and when requested and shall have off-the shelf spare parts for all items installed.

#### 8.4.4. Detection Zones, Alarm Zones and Evacuation Plan

The building shall be divided into the detection and alarm zones. The zone names shall reflect the name of the area being protected, which shall be verified with the client. The contractor is to prepare a complete set of alarm and detection zoning drawings to reflect the Cause and Effect as briefed below.

The fire evacuation strategy shall be full simultaneous evacuation of whole building, which shall be two-staged to allow an investigation period. Fire safety drawings show the fire compartmentalisation which shall be considered as the detection zone boundaries.

The zone names shall reflect the name of the area being protected, which shall be verified with the client. The designer is to prepare a complete set of alarm and detection zoning drawings to reflect the Cause and Effect.

##### 8.4.4.1 Alarm Zones

The following sequence of events is expected to be followed when a detector goes on fire.

- A buzzer on at the fire alarm panel
- Activation of a smoke / heat detector will evacuate the whole building after a 3 minute timer.
- Activation of a manual break glass unit shall immediately trigger the sounders to evacuation mode

In the case that an evacuation mode is commenced the following sequence of events shall occur.

- Audible and visual alert sound will be activated.
- Fire doors shall be released
- Any passenger lifts shall be lowered to ground floor and halted.

- Public Address system switched off.
- Access control doors released.
- Fire brigade access door released
- Air supply fans switched off. (if applicable)
- Fuel solenoids close

Loop interface units shall be installed to individually control or monitor the following;

o Gas Extinguishing System and solenoids (not included in this tender)

Certificates of safety, function and coordination tests and a final commissioning certificate shall be signed by an engineer holding a warrant, in conformity to the applicable standard and to the satisfaction of the client and/or his representative. The contractor is to verify the routing of the present wiring against the drawings provided so as to provide on part completion or on completion, a full correct set of "AS FITTED" drawings and signed off by the same engineer. The final Cause and Effect shall also be signed off by the same engineer responsible for the project.

An autodialer shall be installed in order to call the Fire Brigade in case of fire.

## 8.5 CCTV Systems

The CCTV system shall comprise of a number of IP PoE HD mega pixel cameras, monitoring the study area with the archive hall. Communication will be required with the Curia's IT department to set up the cameras and NVR so that they fully communicate with the existing infrastructure. The dedicated IT backbone is provided by the Curia's IT department. The NVR shall be located in the office as indicated in the drawings.

### 8.5.1 Design Concept of CCTV Systems

The CCTV NVR shall allow for the communication of up to 4 cameras, complete with software and licences for viewing from any predefined IP networkable devices which shall support IPv4 and IPv6. The mobile application shall predominantly show any particular views from where any motion or trip was triggered.

The individual cameras shall be in turn connected to a patch panel and switches by means of CAT6 network cable. The ELV equipment, namely patch panel, switch and PC when applicable, shall be located inside a water tight data cabinet which shall be provided by the Curia. The provision of any camera, NVR and internet connection software shall also form part of this tender

The central equipment shall be housed in an industry standard 19" rack whose height and depth shall be adequate to take all the necessary network video recorder, any redundant equipment, patch panels, media converters, multiplexing equipment and all other ancillary equipment.

A suitable dedicated Internet connection shall be included as an option in the offer. In this respect, the Bidder shall specify the speed requirements, both downlink and uplink in megabits per second for acceptable user experience. The Client reserves the right to source this service directly with a telecoms service provider based on the requirements provided by the Bidder.

### 8.5.2 Submittals

The contractor shall submit all relevant literature for approval prior to purchasing any equipment or materials for this project. This literature shall include certification from the contractor's engineer that the equipment is in conformity with these technical specifications. All

materials and equipment used under this contract shall be of uniform design throughout, and similar parts and equipment shall be interchangeable.

The contractor shall prepare detailed installation drawings which include, wiring drawings and schematics as may be necessary in the Engineer's opinion for the proper execution of the works. These shall be submitted to the Consultant for approval before execution of the work.

The Consultant, upon his satisfaction shall give his consent to proceed, for the purchase of equipment, the construction drawings, and calculations full of all systems concerned.

Prior to handover of any sub system, the Engineer shall approve the As Fitted drawings together with all necessary documentation as detailed in the reference documents.

### 8.5.3 Material and Equipment

#### 8.5.3.1 CCTV Cameras

Cameras and camera housing shall be powered through 24VAC.

The CCTV system shall be sized such that no jittering of images, glitches etc are experienced when using the system at full capacity. The cameras shall be viewed on multiple monitors connected to a remote monitoring workstation installed in the control room and through any other computer via a secure connection. Each PC shall have the appropriate software installed in order to provide the user with the possibilities to:

- Play recorded images
- Zoom into any selected camera
- Select Display cameras
- Export recordings to external sources for further investigation
- Adjust display settings without affecting the recorded image

The system shall allow for live and recorded video to be displayed simultaneously on the same monitor. The remote viewing application shall allow users on different machines to share their display window in order to jointly investigate live and recorded footage. While viewing one particular camera, the recording function shall still operate for all cameras.

#### 8.5.3.2 Network Infrastructure

##### 8.5.3.2.1 Cable Installation

The cables used for installations shall be CAT6 UTP LSZH.

Connections in cables shall not be allowed except at terminations and fittings unless otherwise authorized in writing by the Consultant.

All the cables shall be clearly marked at terminations and along their length for clear identification if and when required.

The Tenderer shall be responsible to:

- Submit all testing reports for the Cat 6 cable

All cables and termination hardware shall be 100% tested for defects in installation and to verify cable performance under installed conditions. The contractor prior to system acceptance shall verify all conductors of each installed cable useable. Any defect in the cabling system installation including but not limited to cable, connectors and patch panels shall be repaired or replaced in order to ensure 100% useable conductors in all cables installed. Any repaired or replaced cables shall be re-tested prior to final acceptance.

All test results shall be recorded as pass/fail and referenced to the appropriate cable identification number and circuit or pair number. In addition, each measured value of each test parameter shall be recorded, displayed in relation to the appropriate test limits and referenced to the appropriate cable identification number and circuit or pair number. A copy of the test results shall be submitted by the contractor, in both hard copy and electronic formats, upon final commissioning.

#### 8.5.3.3 IP Cameras

Cameras shall be compatible with the Video Management System (VMS) and of the same brand, able to support 100BASE-TX and POE 802.3af network interfaces for streaming video and control data over standards compliant networks. When connected to the network, cameras, encoders and NVR's shall be automatically detected.

The High Definition Cameras shall support user selectable image dimensions, or windowing, to enable lower bandwidth and/or higher refresh rates for the image or portion of the image being monitored. Each camera shall support user configuration of:

- Network parameters including static IP address, subnet mask, gateway and control port.
- Camera name and location
- Image acquisition parameters including automatic exposure control, manual exposure control, flicker control, auto-iris control, backlight compensation, day/night control.
- A compression quality and image rate per individual camera.

The cameras shall have the ability to switch between day and night modes. During night time, High Definition cameras as specified shall incorporate a removable IR filter mechanism for improved performance in low light, night time conditions or in applications requiring near IR illumination. The camera shall be able to automatically remove the IR filter and enter a monochrome mode when the available light drops below a set threshold.

The High Definition IP Cameras shall operate in the software platform environment with support for automatic detection of cameras, encoders and NVRs in the same broadcast domain. The High Definition IP Dome Camera shall support user selectable image dimensions, or windowing, to enable lower bandwidth and/or higher refresh rates for the image or portion of the image being monitored.

The High Definition IP Cameras shall incorporate the following main features;

- a removable IR filter mechanism for improved performance in low light, night time conditions or in applications requiring near IR illumination.
- support user configuration of an unlimited number of independent motion detection zones within the camera field of view.
- support user configuration of up to 64 privacy zones within the camera field of view unless otherwise stated in the specifications table.
- support user configuration of compression quality and image rate per individual camera.
- support UDP transport.
- remotely upgradeable over an IP network for feature enhancements and investment protection.
- functional in both indoor and outdoor environments as specified in the specifications table.
- tamper resistant screws
- impact and weather resistant construction that meets the IK10 and IP66 standards respectively.

#### Minimum Specifications

| <b>Camera Type A 2MPix</b>                                                     | <b>Dome Camera with IR</b>                                                                                         |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
|                                                                                |                                                                                                                    |
| Image Sensor:                                                                  | 1/2.7" progressive scan CMOS                                                                                       |
| Active Pixels:                                                                 | 1920 (H) x 1080 (v)                                                                                                |
| Compression:                                                                   | H.264 (MPEG-4 Part 10/AVC), Motion JPEG                                                                            |
| Streaming:                                                                     | Multi-stream H.264 and Motion JPEG                                                                                 |
| Angle of View                                                                  | 35° - 98°                                                                                                          |
| Minimum Illumination:                                                          | 0.2 lux (F1.2) in color mode;<br>0.02 lux (F1.2) in monochrome mode                                                |
| White Balance:                                                                 | Automatic, Manual                                                                                                  |
| Backlight Compensation:                                                        | Adjustable                                                                                                         |
| Dynamic Range:                                                                 | 69dB                                                                                                               |
| Electronic Shutter Control                                                     | Automatic, Manual (1/6 to 1/8000 sec)                                                                              |
| Lens:                                                                          | 3-9mm F1.2 motorised remote focus and zoom                                                                         |
| Motion Detection                                                               | Selectable sensitivity & threshold                                                                                 |
| Image Rate:                                                                    | 13 FPS at full resolution                                                                                          |
| Infra Red Illumination:                                                        | 850 nm wavelength, 30 m (100 ft) max. distance of IR illumination at 0 lux with auxiliary power or PoE             |
| Privacy Zones                                                                  | Up to 4 zones                                                                                                      |
| Audio                                                                          | Input / Output line level input                                                                                    |
| Power Source:                                                                  | VDC: 12 V<br>VAC: 24 V<br>PoE: IEEE802.3af Class 3 compliant                                                       |
| External I/O Terminals:                                                        | (1) alarm input terminal and one (1) alarm output terminal.                                                        |
| Environmental:                                                                 | Operating temperature -10°C to +50°C / humidity 20-80% non-condensing                                              |
| Networking:                                                                    | 100BASE-TX                                                                                                         |
| API:                                                                           | Onvif complaint                                                                                                    |
| Security:                                                                      | Password protection, HTTPS encryption, user access log                                                             |
| Protocol:                                                                      | IPv4, HTTP, HTTPS, RTP, TCP, UDP, DHCP                                                                             |
| Camera Enclosure:                                                              | IP-66-Rating, aluminum body, tamper resistance, powder coat                                                        |
| The camera shall carry the following Electromagnetic Emissions Certifications: | 1. IC ICES-003 Class B<br>2. FCC Part 15 Subpart B Class B<br>3. EN 55022 Class B                                  |
| The camera shall carry the following Electromagnetic Immunity Certifications:  | 1. EN 55024 Class B<br>2. EN 61000-4-2<br>3. EN 61000-4-3<br>4. EN 61000-4-4<br>5. EN 61000-4-5<br>6. EN 61000-4-6 |

|                                                             |                                                      |
|-------------------------------------------------------------|------------------------------------------------------|
|                                                             | 7. EN 61000-4-11                                     |
| The camera shall carry the following Safety Certifications: | 1. UL 60950<br>2. CSA60950<br>3. EN 60950-1<br>4. CE |

#### 8.5.3.4 Network Video Recorder

|                                |                                                         |
|--------------------------------|---------------------------------------------------------|
| Recording Rate:                | 80 MB/s                                                 |
| Playback Rate:                 | Up to 40 MB/s                                           |
| Camera Channels:               | 4                                                       |
| Recording Image Rate:          | 4 channel with 1080p real-time live view max120fps@1080 |
| Operating System:              | Microsoft® Windows Embedded Standard 7 (64 Bit)         |
| Hard Disk Drive Configuration: | 2 SATA III Ports, Up to 6 TB capacity for each HDD      |
| Storage Capacity:              | Up to 4TB                                               |
| Minimum Processor:             | Intel Core i7-3770                                      |
| Memory:                        | 08GB DDR3                                               |
| Video Outputs:                 |                                                         |
| Network Interface:             | (1) 10/100/1000 Mbps RJ-45                              |
| Uplink:                        | (2)10/100/1000 Mbps Combo SFP                           |
| Total POE Outputs :            | X4 10/100 (802.3at)                                     |
| Operating Temperature:         | 0°C to 40°C                                             |
| Power Input:                   | 100-240 VAC,                                            |
| Certifications/Directives:     | CE, RoHS, NOM, VCCI                                     |
| Safety:                        | CSA 60950-1                                             |
| Electromagnetic Emissions:     | C ICES-003 EN 55022                                     |
| Electromagnetic Immunity:      | EN 61000-4-8 EN 61000-4-11, EN 61000-4-3 EN 61000-4-4   |

##### 8.5.3.4.1 Recording Factors:

The network video recorders shall be capable to record the video feeds for 15 days on an average of 90% motion daily using the below. Reduced frame rate by half shall archive old video footage for an additional 5 days. Total 20 days.

- Total quantity of Internal Dome 2MP Camera Set at 08 frames per second full resolution.

The bidder shall submit all NVR storage calculations and camera resolutions proving that the system is in line with the requirements shall be submitted together with the offer.

#### 8.5.3.5 Network Video Management Software

The Network Video Management Software (NVMS) shall be of the same brand of the cameras and shall allow unlimited simultaneous remote viewing connections for both LAN and WAN connections. The system shall allow for advanced operation of the NVR functions - including telemetry and multiple unit control. These shall be accessible from both the NVR as well as from a remote computer logged with administrator rights.

The NVMS should include intelligent streaming bandwidth management for high definition images other than the standard protocols such that the system is capable of streaming high definition video over the LAN/WAN without compromising the image quality. The NVMS should support Windows user authentication synchronisation and shall also have the ability to allow users logged in different remote viewing to share their display window in order to jointly investigate live and recorded footage. Multiple users shall be able to investigate same incidents and show each other the findings contemporary from different stations in different locations over the network by means of collaboration.

The software used shall have menus and user manuals in English.



#### 8.5.3.5.1 Screen Modes

The NVMS shall provide a digital freeze frame and electronic zoom in full screen live and playback modes, including the ability to move around a zoomed image.

The NVMS shall be capable of displaying user definable cameras in all multi screen modes and sequence selections.

#### 8.5.3.5.2 Hidden cameras

The software shall have an option to 'hide' cameras from unauthorised personnel, which can be viewed using a supervisor password.

#### 8.5.3.5.3 Recording and playback

The NVMS shall record the camera video signals as a full screen image from each of the cameras. The Network Video Management Software shall support recording and monitoring video and audio streams from sources with bandwidth up to 90 Mbit/sec, frame rate up to 60 fps, and video resolution to a minimum of 25MP. The Network Video Management Software shall not limit the storage capacity and shall allow for upgrades of recording capacity.

The NVMS shall include the following features:

- digitally sign recorded video and audio using 256-bit encryption so video can be authenticated for evidentiary purposes.
- securely transmit all command and control data via TCP/IP using cryptographic keys based on SSL to prevent eavesdropping or tampering.
- automatically detect if video or audio source firmware is out of date with respect to the current installed software and upgrade it.
- automatically detect if client application software is out of date with respect to the current installed server software and upgrade it.
- run as a service configured to automatically start when the server or workstation is powered on and automatically recover from failure or attempted tampering.
- allow system administration, and live and recorded video and audio monitoring all from a single client application that can be located anywhere on the network.
- allow live and recorded video sharing such that users over the same network can share mouse control and investigate any incident contemporary.
- provide a search functionality to discover video and audio sources that are connected on a different network segment than the Control Centre Server.
- provide the ability to connect a video or audio source to multiple NVRs to achieve redundant recording.
- provide the ability to create a failover connection for a video or audio source. If the NVR that the video or audio source is connected to goes offline then the failover NVR will automatically take over the connection.
- provide administration of all system connections from a single window.
- detect if the video or audio signal is lost and alert the system administrator.
- provide the capability to rename all video and audio sources and NVRs.
- record video and audio streams based on a recording schedule that can be defined individually for each video source. The schedule shall be created with the following parameters:

Recording Mode:

- Continuous
- Motion
- Digital-Analogue Inputs
- Alarms
- POS Transactions (additional license)

- License Plates (additional license)

Time and Date Settings:

- Daily
- Weekly

The Network Video Management Software shall provide the ability to manually trigger recording and also provide a pre-event and post-event recording option. Motion detection with adjustable sensitivity, threshold and detection zones shall be available independently on each video source. The system shall have the ability to create alarms and events while informing administrators via an e-mail notification when an alarm, event or an error occurs.

The Network Video Management Software shall provide the ability to reduce the image rate of recorded video over time in order to increase recording capacity. The image rate shall be able to be reduced to one half or one quarter of the original image rate. This setting must be configured separately for each video source. Each video source should have the ability to be configured with a maximum recorded video retention time. The software shall also provide the ability to schedule backups of recorded video with associated events to a local folder or mapped network drive.

The Network Video Management Software shall provide the ability to import Windows users and use Windows credentials to authenticate users.

The system must provide a user-programmable title for each camera and shall record time and date and title with each video image. It shall be capable of playing back video in full screen mode, picture-in-picture, or multi-screen display completely defined by the operator.

The user must be allowed to go to a particular time and date, playback, pause, frame advance/rewind, and speed fast forward or rewind through the recorded footage. An event log feature should log and display every event. The event log shall be searchable by time, date, camera number, event type, and the state of the event (on or off).

The NVMS shall have the ability to allow operators to protect alarm and activity recording with a bookmark.

#### 8.5.3.6 Archiving

The NVMS shall be able to copy a series of images or single images to an external DVD writer or USB drive while continuing the recording process. A digital signature must be applied to all images, sequence of images and the DVD itself allowing it to be verified for authenticity. The system shall also be capable of making backups to external storage devices without interrupting the local recording process.

#### 8.5.3.7 Alarms and relays

The NVMS shall provide exclusive and interleave alarm/activity recording options. Exclusive mode shall record images from only those cameras in an alarm/activity condition. Interleave mode shall prioritise the recording of those cameras in an alarm/activity condition, while recording fewer images of non-alarm cameras.

#### 8.5.3.8 Scheduling

The NVMS shall have a user definable schedule to switch weekend settings, either manually using an external input, or automatically at pre-set times.

The NVMS shall allow user definable cameras, record rates, alarms/activity detection, and interleave/exclusive alarms to be custom set for each schedule setting.

The NVMS shall be able to automatically adjust NVR and workstation daylight saving time (DST) without any operator intervention.

#### 8.5.3.9 Activity detection

The NVMS shall feature programmable activity detection on all video channels, within unlimited individual pixel and shall allow defining different sensibility for each selected zone. Activity detection shall provide Exclusive and Interleave modes of operation. Exclusive mode shall record images from only those cameras viewing activity. Interleave mode shall prioritize the recording of those cameras viewing activity, while recording fewer images of non-active cameras. The NVMS shall have the option to sound a buzzer on activity.

The NVMS shall be able to support real time pattern based video analytics that classify people and vehicles while eliminating other background activity such as moving trees, shadows and reflections even in the most challenging environments.

#### 8.5.3.10 Passwords

The **NVMS** shall have User and Installer security access codes protecting set-up menus. A playback password shall protect the unit from playing back to unauthorised users.

#### 8.5.3.11 Network capabilities

The NVR shall have the ability to connect two Gigabit LAN Ports (1000Mbit Ethernet network). Bandwidth limiting shall be available for Ethernet network transmissions.

Licence free Network Viewing Software for Windows® shall be included with each unit.

The NVR event list shall be viewable over the network by authorised personnel only.

Images stored on the NVR and viewed over a network shall be exported as single images (JPEG), AVI movies or other Brand's RAW format including the proprietary format player to the viewing PCs hard disk using Network Viewing Software.

Images viewed from the NVR over a network need also to be exported with a digital signature intact (for authentication purposes), to the PCs hard disk and can be viewed using PC Playback software supplied with the unit.

The NVMS and NVR shall have an option to set a password to prevent unauthorised users viewing live, recorded images, moving telemetry cameras and viewing hidden cameras over the network.

### 8.5.4 Assurance

#### 8.5.4.1 Warranty

All cameras, servers and workstations shall be covered by a minimum of three years warranty on parts. All other remaining equipment shall be covered by a minimum of two years warranty on parts and labour, from practical completion of the works as certified by the engineer/architect for the defect liability guarantee period.

During the warranty period, the contractor shall provide direct support to the owner via phone and email, access to training and education in the form of documents, videos or other materials via the web.

#### 8.5.4.2 Parts

A list of recommended parts and respective quantities including prices is to be submitted with the contractor's offer.

#### 8.5.5 Preventive Maintenance

The offer shall also include a 5-year service level agreement and preventive maintenance agreement consisting of 5 yearly visits during which all the equipment shall be checked, serviced and certified, which shall at least include the following.

- Indoor cameras
- Network video Recorders
- VMS
- Other active equipment

As for the cameras, 100% of these shall be checked and serviced during the visit.

#### 8.5.6 Proof of Design

The contractor is required to submit a complete system design including necessary schematics and all required NVRs and bandwidth calculations in order to prove that the system being offered can meet the required recording time frames while working flawlessly using the specified resolutions and frame rates. The design shall also include information about the failover (if applicable) system required above as well as future expansion capabilities of the entire system.

#### 8.5.7 Certifications

The winning Contractor must hold an international quality assurance accreditation including but not limited to standard by the International Organisation for Standardization. Throughout the entire process all tasks including installation, testing, commissioning and certification must be performed by personnel holding training certification in both IP Networks and the specific CCTV brand being installed.

The contractor shall also submit:

- A MAF (Material Authorization Form) from the manufacturer must be provided
- Statement that all proposed equipment is genuine, new equipment sourced via a certified partner.

#### 8.5.8 CAT6 Cable

Cable runs must be continuous and connectors or splices are not allowed along the run. Installed cables shall be individually labelled at both ends by permanent and proper means. Special care must be taken to preserve the integrity of the wiring by avoid over tension during pulling and voiding twisting of cable. Bending radii shall be more than 8 time the cable diameter. Long parallel runs of data cables with power cables shall be installed with a minimum separation of 200mm.

Horizontal distribution cable for data circuits shall be Category 6, 4-pair shielded twisted pair cable. The cabling shall be 23 AWG, 4-pair UTP, with a LSZH jacket. Cable jacketing shall be lead-free. The cable shall meet all the performance requirements listed in the Category 6 standard. The cable shall be supplied on wooden reels or in reel-in-box. Cable shall be installed in accordance with manufacturer's recommendations and best industry practices. Cable tray, trunking and conduits shall not be filled greater than the ISO/IEC 14763-2 maximum fill for the particular pathway type. Cables shall be installed in continuous lengths from origin to destination (no splices). The cable's minimum bend radius and maximum pulling tension shall

not be exceeded. Cable bundles and all horizontal cables shall be supported at a maximum of 1.2m intervals. At no point shall cable(s) rest on false ceiling grids or panels. Horizontal distribution cables shall be bundled in groups of not greater than 48 cables. Cable bundle quantities in excess of 48 cables may cause deformation of the bottom cables within the bundle. Cables shall not be attached to ceiling grid or lighting support wires. Where light supports for drop cable legs are required, the contractor shall install clips to support the cabling. Any cable damaged or exceeding recommended installation parameters during installation shall be replaced by the contractor at his own cost prior to final acceptance. Shielded twisted pair cable shall be installed so that there are no bends more than four times the cables outside diameter (4 X cable O.D.) at any point in the run. Pulling tension on 4-pair STP cables shall not exceed 150N for a single cable or cable bundle.

Each Category 6 cable shall be terminated at the outlet location on an 8- position, 8-conductor Category 6 jack to the T568B colour code. Cables shall be dressed and terminated in accordance with the recommendations made in the ISO/IEC 11801 2nd Edition document, manufacturer's recommendations and/or best industry practices. Pair untwist at the termination shall not exceed 6mm for Category 6 connecting hardware. Bend radius of the cable in the termination area shall not be less than 4 times the outside diameter of the cable. The cable jacket shall be maintained as close as possible to the termination point.

All cables and termination hardware shall be 100% tested for defects in installation and to verify cable performance under installed conditions. The contractor prior to system acceptance shall verify all conductors of each installed cable useable. Any defect in the cabling system installation including but not limited to cable, connectors and patch panels shall be repaired or replaced in order to ensure 100% useable conductors in all cables installed. Any replaced cables shall be re-tested prior to final acceptance.

The balanced copper channels shall be tested using a level IIIe tester as specified in IEC61935-1. Level IV testers may be used, provided they meet the accuracy level IIIe as specified in IEC 61935-1, when using a 8 position RJ45 modular interface. Level IV testers as specified by IEC 61935-1 are only specified using a Category 7 interface and can therefore not by default meet the accuracy level specified for level IIIe, this verification have to be proven by the manufacturer or by 3rd party certification.

Each pair of each installed cable shall be tested using a "green light" test set that shows open, short, polarity and pair-reversals. Shielded/screened cables shall be tested with a device that verifies shield continuity in addition to the above stated tests.

Each installed cable shall be tested for installed length using a TDR type device. The cables shall be tested from patch panel to patch panel and patch panel to outlet as appropriate. The cable length shall conform to the maximum distances set forth in the ISO/IEC 11801 2nd Edition Standard. For multi pair cables, the longest pair length shall be recorded as the length for the cable.

Category 6 data cable shall be performance verified using an automated test set to ISO/IEC 11801 2ND Edition CLASS EA -CH Channel parameters. Test results shall be automatically evaluated by the equipment, using the most up-to-date criteria from the ISO/IEC 11801 2nd Edition Standard. All test results shall be recorded as pass/fail and referenced to the appropriate cable identification number and circuit or pair number. In addition, each measured value of each test parameter shall be recorded, displayed in relation to the appropriate test limits and referenced to the appropriate cable identification number and circuit or pair number. A copy of the test results shall be submitted by the contractor, in both hard copy and electronic formats, upon final commissioning.

## 8.6 Data Systems

### 8.6.1 Design Concept of Data Systems

Data outlets shall be RJ45 CAT 6 and provided with a suitable adaptor for connection of telephone handsets. The telephone CAT 6 wiring shall be installed in the U-PVC high-level trunking / Cable basket cannalisation as part of the ELV works and drawn into medium-grade u-pvc conduits to BS 4607, to outlets or installed into multi-compartment trunking as shown on the drawings.

### 8.6.2 Material and Equipment

#### 8.6.2.1 General Installation for ELV systems

#### 8.6.2.2 Cable Canalisation

##### 8.6.2.2.1 Galvanised Trunking

Earth bonding is required across each length of trunking and metal boxes. Bonding shall be by copper strips of 12 x 2mm minimum sectional dimensions, fixed by M4 brass screws. Securing of metal trunking shall be made at regular intervals not exceeding 1m and at 200mm from bends and intersections.

The trunking shall be manufactured from 1mm galvanised steel sheets complete with lid. Bends, tees and cross offs shall be manufactured with proper workmanship as required by the standards and ensure that sharp edges are avoided.

##### 8.6.2.2.2 PVC Trunking / Conduit

PVC trucking and conduits shall be self-extinguishing type.

PVC trunking is to be installed all fittings and fixtures, like tees, bends, lids, separators etc shall be proprietary accessories. PVC conduits shall be heavy gauge complete with adequate fittings which shall be secured with PVC glue and proper adaptors to boxes. Surface installation of PVC conduits is allowed above the false ceilings only, otherwise chased in walls. Bending of PVC conduits shall be made properly and deformed bends will be rejected.

For office areas the three compartment, 170x50mm size, cable management system shall be installed just above the level of the desks.

##### 8.6.2.2.3 Galvanised steel conduit

Surface electrical canalisation in for CCTV shall be made out of either galvanised steel trunking or galvanised steel conduits and fitting. External installation shall also be in galvanised steel conduits and shall be watertight throughout the installation. If flexible galvanised steel conduit is required to connect to other electrical equipment this shall also be water tight. In either case a separate earth wire is required for proper connection.

##### 8.6.2.2.4 Low Voltage Wiring

Single core cable in conduit or trunking shall have stranded plain copper conductors, PVC or XLPE insulation voltage grade 450/750V, self-extinguishing material type. Armoured cables shall be the XLPE extruded bedding type, having galvanised steel wire armour and PVC sheathed overall, to a 600/1000V voltage grade.

Cables for protected circuits, that is, those supplying equipment, which need to continue to function even during a fire outbreak, need to be the fire resistant type, to CWZ classification in accordance with BS 6387, having an out fire barrier in mineral ceramic (mica/glass) material. All cables to be terminated with fireproof glands at both ends.

#### 8.6.2.2.5 ELV Wiring

The wiring shall be CAT 6 or COAX PVC insulated copper cables or fibre optic cables, drawn into conduit.

The loop-in wiring system is to be adopted to avoid jointing of the conductors in the conduit fittings.

Flexible fine stranded wiring cables shall be suitably terminated with lugs or soldered. The Contractor is responsible for cable conductor phasing from the main switchboard to the individual distribution boards and switchgear. Armoured cables shall be terminated with a proper grand complete with earth lugs and shroud for a sound installation.

When cable tray is used the cables shall be secured by cable ties every 2.5m. Cleated armoured cable shall also be secured every 1.0m in a horizontal run and every 2.5m in a vertical run

#### 8.6.2.2.6 Bonding of Metal Fixtures

The Contractor shall be responsible for ensuring that the complete system of conduit, trunking, etc., together with all accessories will have sufficient metallic connection to ensure earth continuity throughout the entire installation, as stipulated by the I.E.E. Regulations.

Any metallic structure or equipment, which may be exposed to a lightning strike, is to be suitably bonded to the lightning protection system, where applicable.

#### 8.6.2.2.7 Workmanship

Wall trenching works shall preferably be affected with a slotting machine (fekruna). Trenches shall be straight, vertical or horizontal. Trenches shall be filled with mortar and limestone and finished to the satisfaction of the architect in charge.

All workmanship shall be of a high standard and shall be fully compliant with the relevant British Codes of Practice, Local Standards and Regulations, or equally approved standards. In addition to compliance with the relevant standards, the REWS Electricity Supply Regulations, and the IEE Regulations, the entire Electrical Services Installation covered under this Contract shall also satisfy the Consultant Engineer's requirements as regards to the finish and general appearance.

The Contractor shall comply fully with Health and Safety Rules and Regulations, shall be held responsible for the safety of his employees, any other employees as well as the general public. The contractor shall be held responsible for any damage incurred to Third Parties, caused by him or his employees. All works shall be carried out by competent and licensed tradesman.

### 8.6.3 Labelling

#### 8.6.3.1 Labelling of Control Panels, Connections and Terminals

All control panels, sub panels, repeaters, switches, hubs, connections and terminals, shall be clearly labelled to indicate clearly the tag number of the item. Where applicable each terminal, fixture and accessory shall also be labelled to show the unique address number which shall be reflected on the final As Fitted drawing

### 8.6.3.2 Labelling of cables

Each multicore cable has to have a cable identification tag at every 10 metres of its length and within 1 metre of its termination at both ends at the panels. At the main control panel, sub panels, repeaters, switches, hubs, connections and terminals, all cables shall be clearly labelled to indicate clearly the circuit or loop number or name.

### 8.6.4 List of limits

The ELV contractor shall proceed with his scope of works as per the following details when connecting to other services.

#### 8.6.4.1 Site Coordination

The ELV contractor shall liaison with the mechanical and electrical contractors, if different, for the coordination of installation of services and equipment on site to ensure proper access for the installation and maintenance.

#### 8.6.4.2 Utility Service

The ELV contractor shall liaison with the utility service providers for the final location of such services and connecting up to them.

#### 8.6.4.3 Electrical Supplies to ELV equipment

The ELV contractor shall coordinate with the electrical contractor on the exact final location, type and size of electrical supply points.

#### 8.6.4.4 Civil works

The civil contractor shall prepare works related to underground sleeves etc. as directed by the ELV contractor, however, MEP BOQ rates may include some of the related works. Any penetrations, underground trenches, inspection chambers and covers are also included in the respective BOQ items or as lump sum price item.

### 8.6.5 Inspections, Testing and Commissioning

- All the works provided as part of the contract shall be inspected and commissioned in accordance with the relevant European Standard Specifications to the satisfaction of the Consultant Engineer.
- All installations shall be inspected and tested in sections as the works proceeds and on completion as a complete system. It shall be noted that the Consultant Engineer may require inspecting and/or testing any equipment during installations. All tests shall be arranged in co-operation with the Consultant and shall be given prior notice of the time, location and nature of the test. No test shall be considered valid unless the Consultant or his approved representative is present for the tests.
- Any defects that emerge and found at any time during the test duration shall be amended and a complete re-test shall be carried out, all at no cost to the client but costs shall be fully borne by the contractor.
- No section of the works shall be in any way concealed prior to testing and inspection and written and documented approval by the Consultant Engineer or his approved representative.
- The services rendered under this contract exclude:
  - o Any labour cost or parts required as a result of damages caused by accidents, fire, flood, lightning strikes and any other acts of God, neglect, misuse, malicious act, act of violence,



- environmental conditions outside those specified for or caused by the contracted equipment, electrical current fluctuations not caused by the contracted equipment.
- o Any maintenance work required due to the use of supplies not approved by the contractor or equipment manufacturer.
- o Replacement of consumable items.

The client shall be informed at least one week before any wire testing, safety testing, function testing, or commissioning is carried out. The contractor's engineer holding a warrant shall approve the test certificates and final commissioning certificates and invite the consultant/client to witness such tests; however, the latter has the right to request further tests as deemed necessary.

The resistance to earth of each local earth electrode and the overall resistance of the complete lightning protection system

The resistance to earth of the lightning protection system shall be below 10Ω

All data points shall be tested individually by a Fluke tester and the individual test shall be provided in appropriate electronic format in compliance to EN 11801.

#### 8.6.6 Instructions to Employer's Staff

The employer's staff will be instructed in the operation and maintenance of the installations by qualified personnel, who shall be fully conversant with the operations and maintenance procedures required for all related items of plant and composite systems, and where necessary specialist sub-contractor staff shall be made available to enable complete instructions to be given. The competence of the trainer and the quality of the presentation shall be to the satisfaction of the Consultant Engineer.

All installations shall be demonstrated in full working order together with the procedures to be adopted in the event of plant or system malfunction and the manner in which plant outputs or control settings can be adjusted

#### 8.6.7 Operation and Maintenance Manuals

On completion of all the works and prior to handing over, the Contractor, shall provide three (3) copies of the complete set of Operating and Maintenance Manuals comprising the details hereinafter mentioned. The manual shall include general description of the installation, indicating the manner of working of each system, forming part of the works.

It shall also detail full instructions for starting up, operating and shutting down each individual assembly of the equipment. Instructions as to the frequency and full requirements of routine and regular preventative maintenance necessary to maintain the equipment in a good working condition shall also be included. This information is to be supplemented by the Manufacturer's Maintenance Instructions for each assembly part of the equipment.

Attached to the manual there shall be a recommended list of spare parts, including manufacturer's address and local stockist/agent as well as wiring diagrams of the system and equipment.

#### 8.6.8 Defect Liability Period Maintenance

All installation and equipment shall be covered by a minimum of 24 calendar months from practical completion of the works as certified by the engineer/architect for the defect liability guarantee period.

The offer shall also include a 5 year service level agreement and preventive maintenance agreement consisting of 5 yearly visits during which all the equipment shall be checked, serviced and certified.

### 8.6.9 Tender Drawings and Schedules

The following drawings and documents are deemed to be an integral part of this document:

| Drawing Title                 | Drawing No    |
|-------------------------------|---------------|
| ELV Services                  |               |
| Fire Detection and Alarm Plan | FD-11-196-18  |
| ELV Plan                      | ELV-11-196-18 |
| Fire Safety Plan              | FS-11-196-18  |

### 8.6.10 List of literature to be submitted with tender

The list of literature below is deemed to be the minimum accepted literature submittal in order to comply with the requirements of the tender. Tenderers are to give the exact supplier product reference number in the appropriate column and the corresponding item number to be shown on the literature attached.

Failure to provide such information may lead to the tender being rejected.

| Item     | Description                       | Reference in Technical Specifications | Supplier reference No |
|----------|-----------------------------------|---------------------------------------|-----------------------|
|          | <b>Fire Detection and Alarm</b>   |                                       |                       |
| 8.6.10.1 | Fire alarm cable                  | Cl. 8.4                               |                       |
| 8.6.10.2 | Conventional detectors            | Cl. 8.4                               |                       |
| 8.6.10.3 | Addressable call points           | Cl. 8.4                               |                       |
| 8.6.10.4 | Sounder/ sounder/beacon           | Cl. 8.4                               |                       |
| 8.6.10.5 | Interface units                   | Cl. 8.4                               |                       |
|          | <b>CCTV</b>                       |                                       |                       |
| 8.6.10.6 | Megapixel camera                  | Cl. 8.5.3.3                           |                       |
| 8.6.10.7 | NVR                               | Cl. 8.5.3.4                           |                       |
| 8.6.10.8 | Network Video Management Software | Cl. 8.5.3.5                           |                       |
|          |                                   |                                       |                       |

## 9. FURNITURE

### 9.1 Archivist reception desk (refer to drawing)

- 9.1.1 The reception desk will be L-shaped, approx. 2.7m long, and 0.8m wide with a return of approx. 1.5m x 0.3m wide. On the outer side, the reception desk will have a height of approx. 1.2m while on the inner side the desk height will be approx 0.75m. The higher reception counter will be approx. 2.7m long with a width of approx. 0.03m.

- 9.1.2 The reception desk is to be manufactured with a metal frame with metal legs. Tops are to be manufactured with round edge profiles, such that no edge-banding is to be used. Tops are to be made of a seamless, hard wearing, scratch-resistant, stain proof, hygienic, durable and maintenance-free wood-grain laminate
- 9.1.3 Finish of desk tops to be light Oak Laminate or similar. Metal legs are to be made from first grade quality steel which is certified by appropriate and recognised EU Safety standards and/or PREN 15512 and/or EN 10204.3.1B and which must also be high-tensile, galvanised and have a smooth finish. All the steel is to be spray painted with a powder coat of polyester or epoxy paint to a colour selected by the Contracting Authority.
- 9.1.4 Desk top to be provided with entry hole for desktop cabling. The legs of the desks are to have adjustable levelling feet made of rubber to protect the floor surface of the premises
- 9.1.5 The Counter is to be at least 40mm thick and a wooden front panel at least 19mm thick. Colour is to match the desk laminate to be installed. It must be possible to add a particular wording to the front panel such as Kurja ta' Malta or Arkivji at no additional cost. Choice of text font and size is to be presented to the contracting authority prior to installation for their approval.
- 9.1.6 Hidden lighting should be installed underneath to counter such that the desk is lit adequately.
- 9.1.7 Material to be used should be fire retardant and in line with health and safety requirements.
- 9.1.8 Quality of material should be durable and easily cleaned

## 9.2 Book Trolleys

- 9.2.1 Two types of book trolleys are being specified  
Type A - should have 3 full width sloping shelves  
Type B - should have 3 full width flat shelves.
- 9.2.2 Finish should be light oak laminate similar to that chosen for the reception desk.
- 9.2.3 Dimensions approx.H885 x W840 x D465mm
- 9.2.4 Trolley must have 4 swivel 100ml rubber castors each with a capacity of 70kg, two of which must be locking.
- 9.2.5 Quality of material should be durable and easily cleaned

## 9.3 Plan Chest Drawers

- 9.3.1 Dimensions; approx.. H659 x W1327 x D920mm
- 9.3.2 Number of drawers - 8 No x 50mm
- 9.3.3 Must have :
- an anti-tilt mechanism
  - Allow space for opening drawers and retrieving items.

- Drawers should have dust covers or rear hoods to prevent items from being damaged at the back of the drawer.
- Drawers should have safety mechanism to prevent them from coming out of cabinets.
- The drawer opening mechanism should have steel wheels or ball bearings so that smooth opening and closing of drawings is achieved. This is important so that archival material is subjected to the least amount of vibration to items.

9.3.4 Quality of material should be durable and easily cleaned

**9.4 Reading Desks**

- 9.4.1 These reading desks are required for use by the patrons of the archives. They are to have an integral lighting system suitable for reading, contain usb charging docks, and electrical connection points.
- 9.4.2 Finish should be light oak laminate similar to that chosen for the reception desk.
- 9.4.3 Dimensions; approx.. H750 x W3000 x D1120mm
- 9.4.4 Worktop thickness of approximate 30mm
- 9.4.5 8no. Wooden or metal matching chairs to match table material. Chairs are to have arm rests.

**9.5 Swivel chairs for reception desk**

- 9.5.1 Medium Back Desk Chair with Arms 360 degree Swivel Computer Chair
- 9.5.2 Adjustable Height with Tilt Function Executive Chair Recline Cushioned Seat and back.
- 9.5.3 5 arm steel base on caster wheels.

**9.6 Entrance Floor matting**

- a) Standard proprietary double-sized entrance matting set within a galvanised steel perimeter frame to form a mat well of size 1.5 x 2.6 metres, positioned as indicated by the Architect in charge.
- b) Matting to be of a full length closed strip type with hard wearing, highly absorbent pile surface fibre reinforced rubber strips, spaced apart by special extruded aluminium alloy strips and woven on electro-galvanised high tensile steel wires housed in aluminium alloy edging strips.
- c) A sample of the matting and colours available are to be provided with the tender.

## **SECTION 5 - SUPPLEMENTARY DOCUMENTATION**

### ***5.1 - Draft Contract Form***

### ***5.2 - Glossary***

### ***5.3 - Specimen Performance Guarantee***

### ***5.4 - Specimen Pre-financing Guarantee***

### ***5.5 - Specimen Retention Guarantee***

### ***5.6 - General Conditions of Contract***

The full set of General Conditions for Works Contracts is included in the tender package.

It is hereby construed that the tenderers have availed themselves of these general conditions, and have read and accepted in full and without reservation the conditions outlined therein, and are therefore waiving any standard terms and conditions which they may have.

These general conditions will form an integral part of the contract that will be signed with the successful tenderer/s.