



## ***Din l'Art Helwa***

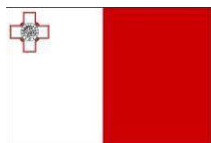
REFERENCE NUMBER: PA.5.0101/04

### **Tender for restoration works including mechanical and electrical works of it-Torri tal Qawra, located in Dwejra, San Lawrenz, Gozo**

Date Published: 30<sup>th</sup> July 2021

Deadline for Submission: 17<sup>th</sup> September 2021 at 09:30am CEST

Tender Opening: 23<sup>rd</sup> September 2021 At 09:30am 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

**Din l'Art Helwa**

133, Melita Street, Valletta

MALTA

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# SECTION 1 - INSTRUCTIONS TO TENDERERS

## 1. General Instructions

- 1.1 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 Din l'Art Helwa, 133, Melita Street, Valletta, 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 restoration of the exterior and interior of the Torri ta Qawra in Dwejra San Lawrenz Gozo and necessary mechanical and electrical works.
- 1.3 The place of acceptance of the works shall be the Din l'Art Helwa, 133, Meita Street, Valletta, the time-limits for the execution of the entire contract shall be 46 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 €309,520 excluding VAT.

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 Din l'Art Helwa

1.8 This tender is not a reserved contract.

## 2. Timetable

| 2.                                                                                                                                                                                                                                                                                                                                                        | DATE                            | TIME       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------------|
| Clarification Meeting/Site Visit (Refer to Clause 6.1)                                                                                                                                                                                                                                                                                                    | N/A                             | N/A        |
| Deadline for request for any additional information from the NGO<br><br>Clarification requests should be addressed to: <i>NGOs e-mail address</i><br><a href="mailto:northerncoastalwatch@gmail.com">northerncoastalwatch@gmail.com</a>                                                                                                                   | 31 <sup>st</sup> August 2021    | 17.00 CEST |
| Last date on which additional information can be issued by the NGO                                                                                                                                                                                                                                                                                        | 8 <sup>th</sup> September 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)                                                                                                                                                                                                               | 17 <sup>th</sup> September 2021 | 09.30 CEST |
| Tender Opening<br>Due to the Covid-19 Pandemic tender opening session will take place 23/09/2021 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. | 23 <sup>rd</sup> September 2021 | 09.30 CEST |
| * All times Central European Time (CET) / Central European Summer Time (CEST) as applicable                                                                                                                                                                                                                                                               |                                 |            |

## 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 Din l'Art Helwa.

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

- 6.1 No clarification meeting will be held.

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 necessary documents as follows: <sup>(Note 2)</sup>

- (i) No Bid Bond is required.
- (ii) Declare agreement, conformity and compliance with the General Rules Governing Tenders for NGOs. <sup>(Note 2)</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 2)</sup>
- (iv) Power of Attorney (if applicable) <sup>(Note 2)</sup>
- (v) Data on Joint Venture/Consortium (where applicable) <sup>(Note 2)</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 2)</sup> - Applicable for this tender

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

- (i) Declaration concerning exclusion grounds <sup>(Note 2)</sup>
- (ii) Declaration concerning *Selection Criteria* <sup>(Note 2)</sup>

### (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, the Self-declaration form for Key Experts (relating to public employees - if applicable) and all other documentation as requested. <sup>(Note 2)</sup>

The following Key Experts are required:

- a) Key Expert 1: Warranted Perit (MQF Level 6) whom shall be assuming all the responsibility in terms of legal obligations arising from Maltese Law. (Warrant number to be provided);
- b) Key Expert 2: Qualified Restoration Technician having at least an MQF Level 4 qualification in a related area of study;
- c) Key Expert 3: Licenced Stone Mason (Licence Number to be provided);
- d) Key Expert 4: Accredited Health & Safety Officer. Proof of accreditation to be provided;
- e) Key Expert 5: Warranted Electrical Engineer (Warrant Nos to be provided);
- f) Key Expert 6: An Electrician in possession of Licence B. (Licence Number to be provided)
- g) Key Expert 7: Project Manager (MQF level 4 in related area of study) responsible for the works - to oversee and co-ordinate the works with the Supervisor in charge of the project. He or she shall act as a single point contact for the duration of works;

The Contracting Authority reserves the right to impose on bidder/s a change in Key Expert at tender evaluation stage without providing supporting justification and the bidder/s must change the key expert within 5 working days from notification.

The Contracting Authority reserves the right to impose on the Contractor to change a key expert throughout implementation and the Contracting Authority may do so without providing supporting justification. The Contractor must change the key expert within 5 working days from notification.

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

- h) Tender Technical Offer Declaration Form signed by the bidder <sup>(Note 3)</sup>. **(Note: Submission of an unsigned declaration form or a modified declaration form will automatically invalidate the tender bid).**
- i) A detailed restoration method statement including information on all proposed products and materials (such as mortar mixes, etc.) which is to clearly illustrate how the tenderer expects to achieve the requirements set in the tender specifications and related bill of quantities. <sup>(Note 3)</sup>
- j) A Construction Management Plan clearly outlining access to the site, hoarding and protection, site storage, the use of machinery and equipment, and the human resources that the tenderer envisages to deploy for the completion of the works in question. The plan may include drawings or sketches illustrating site dynamics and logistics, taking into consideration the lack of access to the tower by moving vehicles. <sup>(Note 3)</sup>
- k) A preliminary risk assessment and outline of the health and safety procedures that the tenderer intends to implement for the duration of the works. These documents shall act as a basis for more detailed reports prior to commencement of works by the winning bidder. <sup>(Note 3)</sup>
- l) A graphic works schedule (programme of works) illustrating detailed work phasing and interim milestones. Distinct reference needs to be made between interior works and exterior works. This tool shall clearly show how the tenderer expects to complete the works within the timeframes set in this tender document. The duration of the contract is 46 weeks. <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.** (Note 2)-

- (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. (Note 3) **Not applicable for this tender.**

**In the case of the mechanical and electrical works, during implementation, the Electrical Engineer of the Contracting Authority reserves the right to request all or any of the material and equipment listed in the tender specifications and bill of quantities prior to giving the contractor the approval to utilize such items. The Contractor cannot purchase materials and/or equipment prior to obtaining the authorization from the Electrical Engineer of the Contracting Authority.**

#### **(D) Financial Offer**

- (i) The Tender Form and Tenderer's Declaration are to be completed and submitted with the offer; (Note 3)

- (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. (Note 3)

#### **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. 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.

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  
1 cheapest priced offer satisfying the administrative and technical criteria.



## 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 maybe 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:

Din l'Art Helwa  
133, Melita Street  
Valletta, VLT 1123  
Tel: 21225952  
Email Address: [northerncoastalwatch@gmail.com](mailto:northerncoastalwatch@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 property and shall ensure that all works are carried out without jeopardizing the security of the place.
- Furthermore due to the sensitivity of the location of the project, the contractor is to ensure that the site is kept in good order at all times, that the surrounding area is not disturbed or disrupted in any way and that all waste is disposed of accordingly.

## **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 submissions are detailed in Section 4 Technical Specifications of this Tender.

- 11.14** 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.
- 11.17** 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.
- 11.20** The Contracting Authority and the Supervisor shall make available, where applicable, 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.
- 11.21** 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.
- 11.22** Where applicable, 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 seven (7) days for the Supervisor to comment. 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.
- 11.23** 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.
- 11.24** 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.
- 11.25** 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.

- 11.26** 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)
- 11.27** 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.
- 11.28** 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
- 11.29** A suitable "housekeeping" programme shall be established before commencement of the project, and be continuously implemented on the Site. The Contractor must ensure that the works do not disturb or disrupt the surrounding area in any manner. The project is located in a Natura 2000 site.
- 11.30** The Contractor will be available to attend regular site, management and progress meetings.
- 11.31** The contractor binds himself to adhere to the conditions imposed in the Planning Permit, that is, the approved drawings, document and conditions imposed in the planning permit for the works envisioned 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.

#### **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. The contractor



shall halt the works and follow all instructions given by the Supervisor to protect or to investigate further the discovery.

The Contractor shall co-ordinate and co-operate with the Supervisor 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 30 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 interventions have commenced such as the repetition of cleaning interventions due to stubborn dirt, the repetition of the application of biocides and herbicides, the consolidation, pinning, repair, stone replacement and re-pointing of areas of the stone fabric as well as mechanical and electrical works. Such works would be resulting from close inspection of works accessible only upon erection of scaffolding or exposed during the course of the 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 that 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 Supervisor 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 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 for written preliminary technical approval, prior to their implementation or procurement. All requests and documentation must be submitted with 10 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 |                                                                  |                       |
|------------------|------------------------------------------------------------------|-----------------------|
|                  |                                                                  |                       |
| Interim Payments | As per measured works                                            | 95% 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**

Not Applicable for this tender.

#### **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 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.

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.

70.4 The Contractor shall be liable to a penalty of €500 (five hundred euro) for each occurrence when the contractor fails to abide by good housekeeping. The project supervisor will issue an administrative order and failure to abide to such instructions will result in the application of the above mentioned penalty.

## 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.

# TECHNICAL SPECIFICATIONS

## **A. PRELIMINARIES/ GENERAL CONDITIONS**

### *A10 SCOPE OF WORK*

#### *100. Scope of Work*

- i. The objective of this Work is to restore the Dwejra Tower in Gozo. It is therefore of primary concern that **all** operations be carried out with a full respect to all parts of the structure and in line with the approved planning permit. This will apply to how materials are handled, how they are stored, how water is disposed of, how tools are used on the historic fabric and how mechanical plant is handled and used.
- ii. 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.

### *A20 GENERAL SITE MANAGEMENT PRACTICE*

#### *101. Site Management Plan*

- i. The Contractor shall submit a detailed Management Plan with the tender offer, taking into account the specifications, general site management practices, and the general health and safety procedures indicated below.
- ii. The Contractor shall abide strictly with all instructions or guidelines issued by the Planning Authority, the Police, and other relevant authorities, in connection with site management, environmental protection, and all other aspects concerning the works. For this purpose, the Contractor shall be required to have a permanent representative on site, authorised to receive instructions and to act upon them.

#### *102. Environment Considerations*



- i. The Contractor shall be required to appoint an Environment Coordinator who will be responsible for all environmental issues on site, and who will maintain constant contact with PA and its monitors, as well as with the Project Manager.
- ii. The Contractor shall take all necessary procedures to control energy use on site. Site lighting shall be, as much as possible, low energy, or energy-efficient, light fixtures shall be downward pointing and shielded to avoid unnecessary light loss and light pollution. Additionally, no reflectors are to be kept at night as the tower is located in a Natura 2000 site.

103. *General*

- i. The workmanship for all elements shall be in accordance with BS 8000 Workmanship on Building Sites, where applicable, Malta Standards Authority Standards, (MSA-EN Standards), European Standards, (Harmonised EN- Standards, or European Technical Approvals), or International Standards (ISO- Standards), in this order of priority, shall be used to determine satisfactory performance, unless otherwise indicated in the Specification.
- ii. All standards referred to in this document shall be superseded by the latest standards published.
- iii. Any topsoil, and original horizontal surfaces, shall be protected against adulteration with subsoil, rubbish, stone or hardcore, and protected against contamination by petrol, oil, lime, cement or other injurious substances.
- iv. The Contractor is to be responsible for the protection of all historic surfaces. All equipment and machinery used shall be equipped with the necessary fittings to ensure such. All equipment and machinery shall be fitted with rubber-tyres to minimise damage to the original historic surfaces.
- v. The Contractor shall ensure that all chemical agents to be used shall not leave behind harmful by-products such as soluble salts, not leave behind a more uneven surface and be applied according to the guidelines recommended by the manufacturer.

104. *Operatives*

- i. Operatives shall be skilled and experienced with the materials and procedures required for the types of works specified.
- ii. The Operatives must hold or be trained to obtain relevant Certificates of Competence.
- iii. Site staff responsible for supervision and control of the work is to be experienced in the assessment of the risks involved and, in the methods, and works to be carried out.
- iv. The Contractor shall provide evidence of training and previous experience of operatives to the Architect in Charge on request.

105. *Materials and Components*

- i. All components and materials taken from the Site are to remain the property of the Employer unless specifically instructed in writing; they shall be carefully removed and stored on site as directed, and protected until removed by the Employer, re- used in the Work, or the end of the Contract.
- ii. All materials resulting from the restoration works shall be carted away in rubber-tyre barrows, transported out of the Site, and dumped in an approved dumping site. All dumping fees, and other expenses, shall be included in the rates.

106. *Cleanliness*

- i. Cleanliness is essential for all work. The Contractor shall take all the necessary steps to ensure that the site and surrounding public and private areas are kept clean and tidy during all stages of the work.
- ii. The Contractor shall comply with the following general procedures:
  - a) The Contractor shall not permit contact between different types of adhesives, plasters and other materials which are not compatible.
  - b) The Contractor shall keep tools and mixing/handling equipment clean.
  - c) The Contractor shall remove all traces of each batch of mixed materials from containers, before adding a fresh mix.
  - d) The Contractor shall not permit wet materials to splash, or otherwise, adhere to, or contaminate other surfaces, but shall mask surfaces where and as necessary. The Contractor shall take special precautions to avoid contact with glass.
  - e) The Contractor shall ensure completed work is kept clean.

107. *Waste*

- i. All waste shall be covered and properly contained to limit dust propagation, and to reduce the potential for accidental damage to the historic fabric. The waste shall be collected in covered skips in specific areas, easily accessible to the waste disposal vehicles. Skips shall be removed on a regular basis, and not permitted to stay on site for periods of longer than one week, except that materials that may have potential for re-use or re-cycling shall be maintained on site, albeit in an orderly fashion.
- ii. The disposal of hazardous waste shall be carried out in accordance with procedures approved by the EPD (Environment Protection Department) and PA (Planning Authority). Any hazardous material shall be notified to the Environment Protection Department and shall be transported in accordance with the relevant Regulations. Hazardous wastes shall be as defined in the EU Council Directive 2000/532/EC. Relevant hazardous wastes include petroleum tank bottom sludges, waste acidic or alkaline solutions, wastes containing metals, waste hydraulic, engine, or bilge oils, degreasing agents or solvents, discarded equipment containing PCBs (Printed Circuit Boards) or asbestos, waste explosives, batteries and accumulators, soil, stone or waste containing dangerous substances, and insulation material containing asbestos.
- iii. Sanitary waste during the works shall be disposed of chemically.
- iv. Burning of waste plastics and wood on site shall not be allowed.
- v. Waste oils shall be collected in accordance with national regulations, and other waste disposed of in accordance with the indications of the EPD.
- vi. All activities producing dust shall be controlled, and measures such as spraying with water shall be used to ensure that the emitted dust is minimised. Dust-laden materials shall be removed from the site, and transported through public thoroughfares, only after thorough watering before leaving the site. Dust covers, of appropriate material, properly secured along all sides, shall be used on all open-topped vehicles used for the transportation of rubbish or debris from the site.

108. *Storage of Chemical Drums*

- i. Any chemical drums that may need to be on site shall be stored on impervious surfaces in designated bunded areas. Oil tanks shall be similarly stored.
- ii. The bunds shall have a capacity equal to 110% of the volume of the largest drum. Since the bunds are meant to cater for operational leakages and spills, this is considered as sufficient.
- iii. The bunds shall have no drains, and provision shall be made for pumping out rainwater. Filling and vent pipe-work shall be located inside the bund. The bunds shall be available for inspection.
- iv. Empty drums shall be stored in a similar fashion, in separate areas, and shall be safely disposed of in accordance with the arrangements made with the EPD.

109. *Noise levels*

- i. All plant shall be operated with any relevant doors closed and shall be fitted with silencers and noise suppressors.
- ii. All plant and site operations will be required to conform to BS5228. The Contractor shall select and utilise methods of working, and items of plant, so that the maximum measured ground vibrations do not exceed a peak particle velocity of 3mm per second at any occupied property, and 5mm per second at other properties, or any values indicated by the relevant Authorities.
- iii. Noise levels at the perimeter of the site shall not exceed 70dB, or the value indicated by relevant Authorities. In exceptional circumstances, the Contractor may apply for consent to carry out works that could exceed these specific limits of ground vibration or noise, but always subject to prior approval by PA.

- iv. The use of any, compressor or other noisy plant shall be limited between 08:00 and 19:00, on Mondays to Fridays, and between 09:00 and 17:00 on Saturdays. No such operations shall take place on Sundays and public holidays.

110. *Completion*

- i. Upon the issue of any Taking-Over certificate, the Contractor shall clear away and remove from that part of the site to which such Taking-Over certificate relates, all Contractors' Equipment, surplus material, rubbish and Temporary Works of every kind, and leave such part of the Site and Works clean and in a workmanlike condition to the satisfaction of the Architect in Charge.
- ii. Provided that the Contractor, shall be entitled to retain on Site, until the Defects' Liability Period, such materials, Contractor's Equipment and Temporary Works as required by him for fulfilling his obligations during the Defect's Liability Period.

*A40 INFORMATION TO BE SUBMITTED WITH TENDER DOCUMENTS*

*111. Submissions and sample selection*

- i. Samples or technical literature listed, together with health and safety data sheets on each of the selected products where applicable, shall be submitted by the Contractor for approval, at his own cost, with the tender submission.
- ii. All samples shall be labelled clearly with the Contractor's name, and reference as per list below.
- iii. The Contractor shall be responsible for submitting manufacturer's shop drawings wherever required in these specifications or as requested by Architect in Charge, and shall not carry out any work in connection with elements detailed in the submittals until the necessary approvals have been received.
- iv. Approved samples shall be used as controls for the Works.
- v. The Contractor shall be responsible to protect and safely store all samples from adverse weather and damage, for reference purpose.
- vi. The contractor is to obtain approval of appearance before placing orders with suppliers or proceeding with production.
- vii. The samples shall represent the range of variation in appearance for each type of material to be matched.

*A40.01 METHOD STATEMENTS/ TECHNICAL DETAILS/ SAMPLES*

*112. General*

- i. The following method statements, technical details and samples shall be submitted by the Contractor for approval prior to the commencement of works.

Scaffolding

SF1 Detailed proposals for the scaffolding, including detailed drawings and calculations for all systems, along with technical data for all materials to be used.

Stone changing

SC1 A method statement describing specialised support systems required for stone replacement as described in the Bill of Quantities.

Cleaning of masonry surfaces

A method statement describing the cleaning of masonry using the following techniques:

MC1 Brushing and scraping

## MC2 Hand held water spray cleaning

- ii. Samples and technical specifications, as well as a method statement describing the use of the following methods of masonry repair:

### Masonry repairs

- SC1 Stainless steel ties, or the approved equivalent, including technical data/samples of the polyester or epoxy resin adhesives used with the dowels shall also be included.
- SC2 Resin injection system for repair of cracks
- SC3 Structural adhesives for piecing-in

### Plastic repair

- PL1 Non-ferrous or stainless-steel reinforcement for plastic repairs and required epoxy resin.
- PL2 Brass wire netting and/or glass fibres, or the approved equivalent, for mortar reinforcement.

### Grouting and repair mortars

Technical specifications, as well as a method statement (and a sample where appropriate) describing the following grouting methods:

- GT1 Hand grouting system and grout mixes
- GT2 Gravity injection system and grout mix.
- GT3 Nylon/stainless steel pins to be used as reinforcement.
- GT4 Injection mortars

### Mortar

Samples and technical specifications, as well as a method statement describing the use of the following pre-prepared mortars:

- MT1 Ready prepared lime putty
- MT2 Technical details and a sample of the ready-mixed lime mortar

### Aggregates

AG1 Technical details of the sand to be used for lime mortar

**All Contractors are to note that this list is extensive but may not be exhaustive and the Contractor shall submit further details/samples as required during the works.**



**B. GENERAL HEALTH AND SAFETY CONDITIONS**

To be read with Preliminaries/ General Conditions

**B10 GENERAL**

**113. Project Supervisor**

- i. Appoint a Project Supervisor, who shall be responsible for the co-ordination of the restoration process and specifically, for the preparation and administration of the Health & Safety Plan.
- ii. The Project Supervisor shall prepare a Health & Safety Plan with the following objectives:
  - a) to identify the hazards associated with the restoration process,
  - b) to identify procedures to reduce the hazards to a minimum, and
  - c) to establish procedures to be adopted in the case of accidents.
- iii. The Project Supervisor shall be responsible for continuously updating the Health & Safety Plan and comply with safety rules, for excluding unauthorized persons from the work area, for displaying notices of work, keeping and updating the Building File, and ensuring the necessary health and safety training of the employees.
- iv. He shall also be responsible for notifying all relevant authorities of any accidents, and for reporting to the employer on all such incidents.
- v. The project supervisor shall, during the project execution stage:
  - a) co-ordinate implementation of the general principles of prevention and safety;
  - b) co-ordinate implementation of the relevant provisions in order to ensure that employers, and if necessary for the protection of workers, self - employed persons, follow the health and safety plan;
  - c) make, or cause to be made, any adjustments required to the health and safety plan;
  - d) co-ordinate arrangements to check that the working procedures are being implemented correctly;
  - e) take the steps necessary to check that only authorized persons are allowed onto the site.

**114. Health and Safety Plan**

- i. The Health and Safety Plan shall be submitted for approval to the Health and Safety Authority.
- ii. The National Code of Practice for Health and Safety shall be adopted throughout the all phases of the Project.

**115. First Aid Facilities**

- i. The Contractor shall provide manned first aid facilities on the site and shall be required to respect designated emergency access routes defined in the Health and Safety plan.

## *B10.01 WORKMANSHIP*

### *116. Risk Mitigation Measures*

- i. The following measures shall be adopted to minimise risks on site:
  - a) Clear delineation of plant movement areas;
  - b) Double checks on possible existence of buried services – clear delineation of known services;
  - c) Provision of sturdy work platforms, and guide rails at unprotected edges of existing buildings;
  - d) Use of plant with limited noise emission;
  - e) Establishing clear procedural rules during overhead material handling – enforcement of hard hats.

## *B20 SAFETY PROVISIONS*

### *117. General*

- i. The following provisions shall be made, without limiting, in any way, other provisions that the Contractor may deem necessary to render the Site and the Work safe:
  - a) Where there is an imminent danger to the safety of workers, the Contractor shall take immediate steps to stop the operation and evacuate workers as appropriate;
  - b) Secure fencing, to prevent unauthorised access to the active work areas;
  - c) A Notice, giving information on the specific hazards, and on the availability of emergency assistance, shall be clearly displayed in a position such that those working on site can read it as well as those affected by the Site;
  - d) Routes for the movement of vehicular traffic and plant, within the Work Site, and its immediate surroundings shall be clearly delineated. These routes shall be separated from the areas subject to overhead movements;
  - e) Escape routes and means of escape shall be kept clear at all times. They shall be frequently inspected, especially where access is restricted;
  - f) Existing services, both overhead and underground, within the work site, and immediately surrounding the work site, shall be identified, the respective utility companies contacted for information, and disconnected/made safe;
  - g) Special attention shall be given to lifting, slewing and overhead handling operations to avoid public access areas.
  - h) The Contractor shall take appropriate measures, or shall use the appropriate means, in particular mechanical equipment, to avoid the need for the manual handling of loads by workers;
  - i) All openings through which workers are liable to fall shall be kept effectively covered or fenced and marked in the most appropriate manner;
  - j) Guard-rails and toe-boards shall be provided to protect workers from falling from elevated workplaces; alternatively, adequate safety nets or safety sheets shall be erected, made fast and maintained, or adequate

- safety harnesses shall be provided and used;
- k) Hoist shafts shall be enclosed with rigid panels or adequate fencing at ground level on all sides;
- m) The Contractor shall be responsible for ensuring that all persons on the Site, whether the Contractor's employees or otherwise, wear the necessary personal protective clothing at all stages;
- n) The Architect in Charge shall have the right to send away any of the Contractor's employees, or of his Sub-Contractors, or otherwise doing work on the site if they do not comply with these requirements.

118. *Fire Outbreak*

- i. The Contractor shall take all appropriate measures to:
  - a) avoid the risk of fire;
  - b) control quickly and efficiently any outbreak of fire;
  - c) bring about a quick and safe evacuation of persons.

*B20.01 WORKMANSHIP*

119. *Protective Clothing and Equipment*

- i. Workers shall be provided with, and shall wear the following personal protective clothing and equipment:
  - a) safety helmets or hard hats to protect the head from injury resulting from falling or flying objects, or from striking against objects or structures;
  - b) goggles, a screen, a face shield or other suitable device when likely to be exposed to eye or face injury from airborne dusts or flying particles, dangerous substances, harmful heat, light or other radiation, or other hazardous work;
  - c) protective gloves and suitable protective clothing to protect hands or the whole body when exposed to heat radiation or while handling hot, hazardous or other substances which might cause injury to the skin;
  - d) footwear of an appropriate type when employed at places where there is the likelihood of exposure to adverse conditions, or of injury from falling or crushing objects, hot or hazardous substances, sharp-edged tools or nails;
  - e) respiratory protective equipment, suitable for the environment, when workers cannot be protected against airborne dust, vapours or gases by ventilation or other means;
  - f) waterproof clothing and head coverings when working in adverse weather conditions;
  - g) safety harnesses with independently secured lifelines where protection against falls cannot be provided by other appropriate means.

120. *Storage of materials*

- i. The Contractor shall provide safe, sufficient and suitable storage for flammable liquids, solids and gases such as liquefied petroleum, gas cylinders, lime-based materials and paints.
- ii. Storage areas for flammable liquids, solids and gases shall be rendered secure against trespassers and lime-based materials are to be stored at room temperatures and away from damp.
- iii. Smoking shall be prohibited and “No smoking” notices of appropriate design and shape shall be prominently displayed in all spaces containing readily combustible or flammable materials.
- iv. Combustible material such as scrap wood or plastics, oily/greasy waste, sawdust or packing material shall not be allowed to accumulate in places of work but should be kept in closed metal containers in a safe place.

121. *Scaffolding / support systems*

- i. All work shall be carried out in accordance with the Health and Safety Executive Guidance Note GS51, with BS8004, section 9.7 and generally in accordance with BS5975.
- ii. Adequate precautions shall be taken to protect persons from injury by the fall of materials, tools or equipment being raised or lowered. Such precautions will include fencing, barriers and the like. Safety nets or sheets should be tied at every intersection of the scaffolding tubing and able to withstand rupture from the above-mentioned loads; otherwise barriers (in the form of inclined overhangs) will be introduced at a distance of 4 to 6m above ground level followed by ones at 12m intervals. Fencing, barriers, or the appropriate utilization of lookout men.
- iii. The Contractor shall provide competent supervision to ensure that all scaffolds are used appropriately, and only for the purpose for which they are designed or erected.
- iv. Scaffolding will be assembled on each facade independently and consecutively i.e. one facade restored at a time. Given the battered profile of the walls assembly and footing will be along a 3.5m offset from the tower's building line along which a canvas will be placed to protect the terrain. The scaffolding will also be hoarded with an appropriate canvas.
- v. A winch assembled as part of the scaffolding structure and operated from the a 5-ton truck and/ or a small generator will be employed to haul up and down components, tools, material, etc.
- vi. Where work at the face of a building or other structure is done from a working platform, the space between such face and the working platform shall be as small as practicable, provided that, where workmen sit at the edge of the platform to work, such space may be up to a maximum of 30cms.
- i. In transferring heavy loads on to a scaffold, a sudden shock shall not be transmitted to the scaffold. When hoisting loads on to scaffolds, the loads shall be controlled by a hand rope (tag line), so that they cannot strike against the scaffold. The load on the scaffold shall be evenly distributed, as far as practicable, and in any case shall be so distributed as to avoid disturbance of the stability of the scaffold. Scaffolds shall not be used for the storage of material except that required for immediate use.
- ii. Workers shall not be employed on external scaffolds in weather conditions that threaten their safety.
- iii. Guys, stays or supports shall be used where required to prevent danger;

alternatively, other effective precautions shall be taken to prevent the collapse of structures or parts of structures that are being erected, maintained, repaired, dismantled or demolished.

- iv. No scaffold shall be partly dismantled and left so that it is capable of being used unless it continues to be safe for use.
- v. Gangways and stairways of the scaffolds shall be provided with overhead screens of adequate strength and dimensions to prevent danger from falling objects, working platforms, gangways and stairways of scaffolds shall be provided with overhead screens of adequate strength and dimensions. Materials shall not be thrown from scaffolds; exceptions shall be made only where the landing area has been designated, protected, appropriate notices displayed and is under supervision of a person at landing level.
- vi. Scaffolding materials shall not be thrown from scaffolds or from heights. Other materials shall only be thrown from scaffolds or heights where the landing area has been designated, protected, appropriate notices displayed and is under the supervision of a person on a landing level.
- vii. Openings between the scaffolding and the structure, which exceed 20cm, should be adequately protected by the installation of handrails. Wherever the above hinders operations to be carried out, workers shall be provided with safety harnesses with independently secured lifelines.
- viii. Ant timber used in the construction of scaffolds shall be straight-grained, sound and free from large knots, dry rot, worm holes and other defects likely to affect its strength. Where necessary, boards and planks used for scaffolds shall be protected against splitting. Ladders, boards and planks used in scaffolds shall not be painted, so that any defects remain visible. All tubes, couplers and fittings used in metal scaffolding shall be free from damage and distortion and shall be maintained in a lubricated condition. Couplers shall not cause deformation in tubes. Couplers shall be made of drop forged steel or equivalent material. Tubes shall be free from cracks, splits, and excessive corrosion, and shall be straight to the eye. Tube ends shall be cut cleanly square with the tube axis. Alloy and steel tubing shall not be intermixed on the same scaffold.
- ix. Tower scaffolds shall be designed and built in such a manner that the ratio of height to the base width is not more than 3.5: 1, in the case of static towers used outdoors, and in a ratio of 4: 1, in the case of static towers used indoors; in any case, the height of free-standing static towers should not exceed 12m. Mobile towers shall not be moved while persons or materials are on the top platform. The ratio of height to base width in the case of mobile towers used outdoors shall be of 3:1 but should not in any case exceed 9.6m in the case of free-standing mobile towers.
- x. In the case of prefabricated scaffold systems, the manufacturers' instructions shall be strictly adhered to. Prefabricated scaffolds shall have adequate arrangements for fixing bracing. Frames of different types shall not be intermingled in a single scaffold.
- xi. In addition to the requirements for scaffolds in general as regards soundness, stability and protection against the risk of falls, suspended scaffolds shall have:
  - a) a safe cabin, with full protection from weather and adverse climatic conditions, and designed and constructed in accordance with ergonomic principles;
  - b) a clear and unrestricted view of the area of operation;
  - c) safe access to, and egress, from the cabin, including for situations where the operator is taken ill.

122. *Lifting Gear*

- i. A lifting appliance or item of lifting gear shall not be loaded beyond its safe working load or loads.
- ii. No person shall be raised, lowered or carried by a lifting appliance unless it is constructed, installed and used for that purpose, except in an emergency.
- iii. Every platform or receptacle used for hoisting any loose material shall be so enclosed as to prevent the fall of any of the material.
- iv. Wheelbarrows, whether loaded or not, placed directly on a platform for raising or lowering, shall be so secured so that they cannot move, and the platform shall be enclosed as necessary to prevent the fall of the contents.

123. *'Housekeeping' Program*

- i. A suitable "housekeeping" program shall be established and be continuously implemented on the Site.
- ii. Areas within the Site, which are liable to become slippery, because of oil or other causes, shall be regularly cleaned up, or strewn with sand or sawdust.
- iii. It shall include provisions for the proper storage of materials and equipment, and for the removal of scrap, waste and debris at appropriate intervals.
- iv. Loose materials that are not required for use shall not be placed or allowed to accumulate on the site, to obstruct means of access to, and egress from, places of work and passageways.

B30 *MACHINERY/ EQUIPMENT*

124. *General*

- i. All manual tools, pneumatic tools, electrical tools, etc. shall be suitable for the work to be carried out, shall conform to approved standards and regulations, shall be safe and such that they can be operated without risk to health.
- ii. They shall be provided with protective guards, shields or other devices as appropriate, which shall be maintained regularly, which shall be equipped, where applicable, with an extraction system which shall be as close as possible to any source of the dust, and which sucks away from the breathing zone, not through it, shall be fitted with shock absorbing materials, and be fitted with noise control protection devices at source to reduce as much as possible noise exposure.
- iii. Only insulated or non-conducting tools shall be used on or near live electrical installations if there is any risk of electrical shock. Only non-sparking tools shall be used near or in the presence of flammable or explosive dust or vapour.

- iv. Operating triggers on portable pneumatic tools shall be so placed as to minimize the risk of accidental starting of the machine, and so arranged as to close the air inlet valve automatically when the pressure of the operator's hand is removed. Hose and hose connections for compressed-air supply to portable pneumatic tools shall be designed for the pressure and service for which they are intended, fastened securely to the pipe outlet, and equipped with a safety chain, as appropriate. Pneumatic shock tools shall be equipped with safety clips or retainers to prevent dies and tools from being accidentally expelled from the barrel. Pneumatic tools shall be disconnected from power and the pressure in hose lines released before any adjustments or repairs are made.
- v. Portable electric tools shall generally be used on reduced voltage to avoid as far as possible the risk of lethal shock. All electrical tools shall be earthed unless they are "all insulated" or "double insulated" tools which do not require an earth. Earthing shall be incorporated in metallic cases, and as a safeguard against damaged cables, where wires enter the tool. Electric tools shall be fitted with protection guards that are regularly maintained for their effectiveness. Power cables to electrical tools shall be armoured and/or covered in thick flexible rubber, and socket outlets shall be of special design for outdoor use and protected by a residual current circuit breaker.
- vi. All electrical tools shall receive inspection and maintenance on a regular basis by a competent electrician, and complete records kept.
- vii. The cables of portable electrical lighting equipment shall be of adequate size and characteristics for the power requirements and of adequate mechanical strength to withstand severe conditions in all operations.
- viii. All vehicles and earth-moving or materials-handling equipment shall be of good design and construction, taking into account established ergonomic principles, particularly with reference to the seat; they shall be maintained in good working order, shall be used with due regard to health and safety, by workers who have received appropriate training.
- ix. Where appropriate, earth-moving or materials-handling equipment shall be fitted with structures designed to protect the operator from being crushed should the machine overturn, and from falling material.
- x. All vehicles and earth-moving or materials-handling equipment shall be fitted with a plate indicating the gross laden weight; the maximum axle weight or, in the case of caterpillar equipment, ground pressure.
- xi. Plant, machinery and equipment shall be switched off when not in use and isolated before any major adjustment, cleaning or maintenance is performed. Where trailing cables or hose pipes are used they shall be kept as short as practicable, be mechanically protected and not be allowed to create a safety hazard.
- xii. Mobile high-pressure compressor plants and equipment shall be examined, tested and certified annually by a mechanical Architect in Charge having a warrant to practice his profession.
- xiii. Portable compressors shall be fitted with a double adjustable tow bar and jockey wheel. When the plant/equipment is in operation, wheel chocks shall be installed. The wheels must be fitted with brakes that are operated automatically via a handbrake for parking purposes.
- xiv. Only competent persons shall operate and maintain such plant and equipment

125. *Operators*

- i. The Contractor shall assign workers only to employment for which they are suited by level of training, age, state of health and skill, and having ensured that the workers are fully aware of any risks to health or hazards connected with the work, and that they are trained in the precautions necessary to avoid accidents or injury to health. Such training shall be given in a language that is understandable to the workers. The training shall be sustained periodically and shall take into account any new or changed risks to the health and safety of the employees concerned.
- ii. When the use of equipment is likely to involve a specific risk to the health or safety of workers, the Contractor shall take the measures necessary to ensure that:
  - a) the use of equipment is restricted to those persons given the task of using it, and who have been adequately trained for the specific task;
  - b) in the case of repairs, modifications, maintenance or servicing, only competent workers are specifically designated to carry out such work.
- iii. All operators of restoration equipment shall receive basic training as per Code of Practice provisions.
- iv. Drivers of heavy machinery shall be over 21 years of age and shall have followed an approved course in relation to the equipment to be used or driven and be in possession of a valid licence.

126. *Maintenance*

- i. All vehicles and handling plant shall be certified to be in a proper working order and shall be operated by trained personnel.
- ii. All vehicles and plant shall be properly maintained, and any faults rectified or repaired promptly.
- iii. All vehicles and handling equipment shall be equipped with acoustic signalling devices, with power and hand brakes, with reversing alarms in addition to the normal lights, and with silencers.

127. *Noise Emissions*

- i. Noise emission levels from the plant/equipment must conform to approved standards, for example as stipulated in E.U. Directive 84/553/EEC.
- ii. The exhaust system from the engine must be fitted with a residual silencer.



## *B40 CRANES*

### *128. Certification*

- i. All cranes used on site shall be certified by a warranted mechanical Engineer, in accordance with the regulations issued by the Health and Safety Section of the Department of Labour, every 6 months.
- ii. Copies of the certificates shall be sent to the Project Manager.
- iii. Failure to comply or to update these certificates will lead to an automatic penalty.

### *129. Adverse Weather*

- i. Further measures shall be taken to protect cranes against the effects of bad weather and lightning.

## *B50 TEMPORARY ELECTRICAL INSTALLATION*

### *B50.01 GENERALLY/PREPARATION*

#### *130. Regulations*

- i. Any temporary electrical installation on the Site shall meet the requirements of the IEE Regulations for Electrical Installations, and of the Enemalta Regulations.
- ii. In particular, IEE Regulations paragraph 604, and specifically:
  - a) 604-03 Protection for Safety;
  - b) 604-04 TN System (an IT System of supply shall not be used);
  - c) 604-08 Provision of RCD;
  - d) 604-09 All switchgear must be P55;
  - e) 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;
  - f) 604-11 Isolation and switching; shall be applied. The above shall not apply to any site offices, meeting rooms, changing rooms etc., where the general provisions of the Regulations shall apply

### *B50.02 CERTIFICATION*

#### *131. Certification*

- i. Any temporary electrical installation shall be certified by an independent warranted electrical Architect in Charge, every 3 months, and the certificate shall be affixed in a prominent position next to the Main Temporary Switchboard.
- ii. Failure to comply, or to update this certificate, will lead to an automatic penalty of Lm100 per day.

## **C. RESTORATION OF EXISTING MASONRY**

### *C10 GENERAL REQUIREMENTS*

#### *132. Condition Report and Documentation*

- i. A condition report has been drawn up for the tower outlining the nature and extent of the deterioration.
- ii. The document, together with supplementary information in the way of existing photographic records and additional ones are available for viewing at the Contractors' request.
- iii. The contract drawings include mapping survey of the facades and elevations to be restored, a Restoration Method Statement and Works Method Statement. These drawings highlight the current situation and have been drawn up on the basis of site visits and a visual examination of the facades and elevations in question. The drawings will primarily serve to indicate the general approach to the restoration of existing masonry to be adopted throughout the project.

#### *133. Causes of Deterioration*

- i. The various causes of deterioration depend on a number of factors such as, exposure and orientation, salt contamination (sea spray, rising damp, nitrates and incompatible materials), biological attack, material properties of the stone, neglect, lack of maintenance, human intervention and water infiltration. The various causes of deterioration have given rise to loss of pointing, deterioration of mortars and existing plastering, old repairs, later and contemporary additions, mechanical damage and loss of structural integrity.

### *C20 REPAIRS, CONSERVATION AND CLEANING OF MASONRY*

To be read with Preliminaries/ General Conditions

#### *134. Scope of work*

- i. The work in this section includes the carrying out of the necessary repair work to the deteriorated and damaged masonry of the Dwejra Tower.
- ii. Stone replacement shall be carried out in badly deteriorated areas, areas of missing stones, as well as in areas that have been previously repaired with materials which cause more damage to the stonework. The replacement of stones shall be kept to a minimum.
- iii. The restoration and conservation of the tower in question will include some or all of the following steps.
  - a) Samples and approvals by the Heritage Planning Unit (PA)
  - b) Removal of superfluous accretions, decaying paintwork, plasters and inadequate repairs that have accumulated over the years;
  - c) Replacement of stone, insertion of stone elements and repair to damaged stone elements;
  - d) Careful cleaning of stone surfaces and repointing;
  - e) Restoration of existing timber apertures and security grilles.

135. *Related repair/remedial works specified elsewhere*

- i. The erection of necessary scaffolding/support systems as well as required lifting gear.
- ii. The removal of extraneous fixtures and fittings from masonry surfaces.

136. *Reviewing the scope of work*

- i. Each relevant area of masonry shall be inspected with the Architect in Charge to confirm the type of intervention and extent of work.
- ii. The Contractor shall adequately record the characteristics of existing masonry in areas affected by repair works using measurements and photographs as appropriate, including the record of bonding patterns, joint widths, special features, etc.
- iii. Each masonry unit that is to be removed, replaced or repaired shall be identified with a code number, cross-referenced to drawings/photographs, and kept in the Building File.
- iv. The masonry units or parts of units that are to be cut out and replaced shall be marked clearly with washable paint for approval by the Architect in Charge.

C20.01 *WORKMANSHIP*

137. *General*

- i. Power tools for the removal of mortar will not, in general, be permitted; in special circumstances application shall be made to the Architect in Charge for approval for the use of such tools.

138. *Protection of masonry units*

- i. The Contractor is to make sure to prevent overstressing of masonry units during transit, handling, storage and fixing.
- ii. Dismantled masonry units shall be stored on a level bearer, clear of the ground, and separated with resilient spacers. The units will be protected from adverse weather and stored in dry conditions.
- iii. The Contractor shall be responsible to ensure that the masonry units are not damaged, particularly at arises, projecting features and delicate, friable surfaces; there shall be no soiling, chipping and contamination by salts and other deleterious substances as well as mortar/grout splashes and other staining and marking of the masonry units.
- iv. Masonry units shall be protected with suitable non-staining slats, boards, etc. which must be removed on Completion.

139. *Structural stability*

- i. The Contractor shall ensure that the stability of the masonry structure is maintained throughout work.
- ii. Any defects shall be immediately reported to the Architect in Charge, including signs of movement that are exposed and become apparent during the removal of masonry units.

140. *Disturbance to retained masonry*

- i. The Contractor shall ensure that retained masonry in the vicinity of repair works is disturbed as little as possible
- ii. Approval by the Architect in Charge is necessary whenever existing retained masonry will need to be cut or adjusted to accommodate new or reused units.
- iii. The Contractor shall prop or wedge retained loose masonry units or those that are vulnerable to movement during repair works, so that they are firmly and correctly positioned.

141. *Adverse weather*

- i. The Contractor shall protect ongoing masonry work against rain by covering when precipitation occurs.
- ii. Necessary precautions shall be taken by the Contractor to prevent the masonry bedding from drying out too rapidly in hot conditions and in drying winds.

C20.02 *MATERIALS*

142. *General*

- i. The limestone for replacement stones shall be of good quality stone (*tas-sekonda*), supplied from an approved Gozitan quarry, to give good and consistent aesthetic qualities, durability and uniformity of appearance. The Architect in Charge shall have the right to reject such stone which does not satisfy the above-mentioned criteria.
- ii. All rejected work shall be removed and replaced using new materials at the Contractor's expense.
- iii. The Contractor shall also be bound to replace any defective materials in all or parts of the existing Works by proper materials and/or workmanship as directed by the Architect in Charge.

143. *Recording profiles*

- i. The Contractor shall take measurements and profiles from existing masonry units, identified by the Architect in Charge, to allow replacements to be matched accurately, unless specified otherwise by the Architect in Charge.
- ii. Where inserts are required to record profiles in-situ, but there are no suitable joints, the Contractor shall seek instructions from the Architect in Charge on the method to carry out such operation.
- iii. The Contractor shall prepare accurate drawings and templates as necessary, for approval of the Architect in Charge, clearly and indelibly marked to identify the use and location.

144. *Production information*

- i. Before commencing production of replacement masonry units, the Contractor shall give Architect in Charge not less than 48 hours to allow inspection.

145. *Inspection of masonry units*

- i. All completed units shall be carefully inspected and checked by the manufacturer/supplier against the approved sample/s and compliance with drawings and the specification before dispatch to site. The Contractor shall inform the Architect in Charge at appropriate stages in production to allow inspection of masonry units prior to delivery on site.

146. *Coralline Limestone blocks*

- i. Coralline Limestone blocks (*tas-sekonda*) shall be used in areas as indicated in drawings.
- ii. They shall be supplied from a Gozitan approved source. Inspections of the stone will be necessary for all units to be used in the structure.
- iii. The stone shall be of good quality, without horizontal or vertical fissures and layers, of a uniform and consistent colour. It shall not include mudstone or wackestone.
- iv. The blocks shall have an apparent density of at least 2400 kg/m<sup>3</sup>, a uni-axial compressive strength of at least 60 MPa, and water absorption not exceeding 3%.
- v. The blocks shall be transported to site on pallets and handled in such a way as to minimise damage and waste.

147. *Production of stone*

- i. Replacement units shall be cut and dressed:
  - a) To specified minimum bed depths and agreed face lines with the Architect in Charge. The Contractor shall ensure that suitable allowances are made for any final finishing carried out in-situ.
  - b) To sizes and profiles matching existing masonry, and with existing joint widths maintained.
  - c) With sinkings for fixings and joggles accurately aligned and positioned in relation to existing masonry.
  - d) With each block/dressing clearly marked on a concealed face to indicate the natural bed and position in the finished work.

148. *Natural bed of stone*

- i. The stones shall be cut and dressed so that the natural bed is horizontal in plain walling, vertical at right angles to wall face in projecting stones and copings, and at right angles to line of thrust in arches.

149. *Existing templates*

- i. The Contractor shall ensure that templates for replacement stones are available for making copy templates.

## *C30 REMOVAL AND REPAIR WORKS*

### *150. Superfluous Accretions*

- i. The operation shall include the removal of redundant cables and wires, light fixtures, and other accretions from the facades of the building.
- ii. Care will be taken to remove all metallic inserts, (especially iron and steel fixings), as agreed with the Architect in Charge, from the stonework.
- iii. Corroding metal fixings shall be carefully cut to cause the least possible disturbance to the surrounding masonry; the associated rust debris shall also be carefully removed.
- iv. The holes left behind will then be filled-in using a suitable lime-based mortar when the break is small or by piecing-in stone, if the gap is large, as per specification.

### *151. Paint & Cement-Based Plasters*

- i. For failing, old plaster and similar coatings, manual removal shall be necessary by carefully using hand tools (scrapers with soft, blunt edges or fine-gauge sand paper), and under constant supervision, so as not to damage the stone surface.
- ii. Unsound and cement pointing and facing can only be removed manually, taking care not to damage the surrounding, weakened stone, however, in cases where more damage will be incurred to the substrate, the Contractor is to agree the way forward with the Architect in Charge in charge.
- iii. Mechanical means, especially involving the use of electrically operated power tools (such as rotating-disc cleaners and dry or wet sand-blasters) or tipped metallic tools will not be permitted unless instructed otherwise by the Architect in Charge.

## *C30.01 REPLACEMENTS AND INSERTIONS*

### *152. General*

- i. Repair of existing stone shall be seriously considered before stone replacement is resorted to.
- ii. Changing of any stonework shall be limited to individual, badly deteriorated stones.
- iii. Wherever new stonework is to be used, it shall be of the same colour as the fabric being replaced and of the same type of similar course height and general dimensions.
- iv. The flagstone flooring is to be reinstated using sofstone elements of identical dimensions and finish to the existing.

153. *Preparation for replacement masonry*

- i. The physical process of cutting out shall vary according to the situation, however, due care is required to ensure that the surviving stones adjacent are not damaged and as agreed with the Architect in Charge.
- ii. The cutting of perimeter joints may be carried out with a masonry saw. If stone is to be retained, the cut shall be made by a purpose-made fine saw blade or with a plugging chisel in the case of a wide joint. If stone is to be wasted the stone shall be broken down from the centre of the stone with points and chisels and working towards the edge.
- iii. The defective material shall be carefully removed to the extent agreed with the Architect in Charge.
- iv. Redundant metal fixtures shall be removed completely. The Contractor shall inform the Architect in Charge when any metal fixings, frame members, etc. are exposed, to allow inspection.
- v. Recesses shall be thoroughly cleaned to remove loose material. Joint surfaces shall be left in a suitable condition to receive the replacement units.
- vi. Whenever undercutting of sides of pocket is necessary to provide space for specified bonding material, the Contractor will seek approval of Architect in Charge.

154. *Replacement of stone*

- i. Machine cut faced Coralline Limestone blocks (*tas-sekonda*)– shall be used as replacement masonry unless otherwise indicated by the Architect in Charge.
- ii. During the marking up procedure with the Architect in Charge, the Contractor shall specify the necessary supports including wooden plates, struts and folding wedges and the necessary supporting system when special features are involved.
- iii. Replacement stone shall have minimum bedding depth/s of up to 180mm.
- iv. Non-hydraulic mortar shall be used, as specified. The mortar bed shall not be less than 12mm thick.

155. *Stone inserts*

- i. Coralline Limestone blocks (*tas-sekonda*) – will be used and finished in a way to match the existing masonry and shall be laid flush with the existing face with very fine joints.

156. *Laying replacement masonry*

- i. The stones shall be raised into position by hand, hoist, or hand-winch depending on the weight and location.
- ii. Joint surfaces shall be dampened to control suction as necessary. The units shall be laid on a full bed of mortar and all joints filled. Care shall be taken to ensure that no mortar/grout encroaches upon exposed the faces.
- iii. The new stone shall be dampened to avoid risk of dewatering mortar.
- iv. All faces, angles and features shall be carefully aligned and set out to ensure satisfactory joint widths and relative positioning with existing masonry. The exposed faces of new material shall be kept to the face lines as agreed with the Architect in Charge.



157. *Grouting joints*

- i. Grout mix shall be based on lime, coralline and globigerina limestone sand (xahx) – as per approved RMS.
- ii. Joints around replacement masonry units shall be thoroughly grouted wherever joints cannot be fully filled with bedding mortar.
- iii. The grout shall be kept back from the exposed face to allow for the depth of pointing specified; this shall be achieved using an approved temporary sealing material. The Contractor will ensure that the grout does not stain the exposed face.
- iv. The Contractor shall not point replacement masonry until all the work has *settled-in*. The pointing of the outer 25mm (as a minimum) shall be left until all bedding work has settled.

158. *Placing stone inserts*

- i. Each stone shall be cut to the smallest rectangular shape necessary to replace the defective area and provide a firm seating. The Contractor shall allow sufficient depth for the insert to stand proud of existing stone for finishing in-situ.
- ii. The existing joint widths shall be maintained, and care taken not to bridge joints.
- iii. The pockets to receive inserts shall be accurately cut with small, sharp chisels and small saw blades to a neat, square profile. The sides of pockets shall be undercut, where necessary, to provide space for specified bonding material.
- iv. New shoulders shall be formed to receive any replacement cramps.
- v. The pocket shall be cleaned out thoroughly and the inserts installed accurately and securely. The Contractor shall ensure that no bonding material encroaches upon the exposed faces.
- vi. Piecing-in may also be carried out in larger areas, in which a piece of stone is added to fill in a missing area or replace a part of a deteriorated stone by the insertion of an appropriately cut stone piece, attached using structural adhesives (e.g. epoxy or polyester adhesives), as approved by the Architect in Charge.

C30.02 *DRESSING STONE IN SITU*

159. *Weathering ledges at joints*

- i. Where stones project or are recessed, the Contractor shall carefully weather all ledges to the approval of the Architect in Charge, using suitably graded carborundum blocks or tooling as appropriate.

160. *Descaling stone*

- i. Carefully remove loose scaling and powdering from stones to the extent agreed with the Architect in Charge; suitable bristle brushes shall be used.

161. *Redressing stone*

- i. Carefully dress back stone/s to the extent agreed with the Architect in Charge using suitably carborundum blocks or tooling as appropriate.

*C30.03 PLASTIC (MORTAR) REPAIRS*

*162. General*

- i. Patch/ plastic repairs shall be carried out as indicated and approved by the Architect in Charge.
- ii. Plastic repair shall not be used for areas of extreme exposure, however, in areas such as strings and cornices, their use shall be permitted if protected by means of a flashing, as per Architect in Charge's approval.

*163. Preparation for plastic (mortar) repairs*

- i. Straight horizontal and vertical lines shall be ascribed to the repair area with edges parallel to the joints. Where the repair area abuts joints, the existing joint widths shall be maintained, and care taken so as not to bridge joints.
- ii. Decayed masonry shall be carefully cut back to a depth of not less than 20mm and to a sound background; where the depth of removal exceeds 50mm the Contractor shall seek instructions from the Architect in Charge.
- iii. The Contractor shall ensure that the masonry is not weakened due to the removal of excess material; the removal shall be performed carefully so as not to damage the adjacent masonry.
- iv. The top and vertical edges of the repair area shall be undercut.
- v. In larger areas of intervention, it may be necessary to isolate the repair area by polystyrene strips to facilitate stress-free shrinkage during the curing process.

*164. Reinforcement for mortar repairs*

- i. In cavities exceeding 50mm in depth and extending over 50mm square surface area, drilling and fixing of non-ferrous or stainless-steel reinforcement shall take place.
- ii. Form armatures shall suit profile/s of mortar repair and provide effective reinforcement. The cover to the reinforcement shall not be less than 18mm.
- iii. Holes shall be drilled into the background to receive the reinforcement and bond firmly with a suitable epoxy resin.
- iv. For deep repairs, the strength shall be assisted by means of a brass wire net attached to the stone surface, alternatively, glass fibres shall be added to the mortar material to provide reinforcement.
- v. The repair shall be finished directly to the required profile using a wood or felt-covered float, or with a damp sponge or coarse cloth.

165. *Mortar repairs*

- i. The plastic repair mortar shall be based on a lime binder.
- ii. Aggregates used shall vary from coralline sand, to marble and globigerina limestone sand (xahx) to pozzolanic additives, as agreed with the Architect in Charge.
- iii. The mixes shall approximate a 1:3 binder to aggregate ratio, unless otherwise agreed with the Architect in Charge.
- iv. In the mortar preparation, the Contractor shall ensure that the grains of sand and stone dust are adequately coated with the binder paste.
- v. Slaked lime shall be used as a binder, with the putty mixed wet with the aggregate and stored in an airtight container as far in advance as possible.
- vi. In demanding exposure conditions, hydraulic additives (such as hydraulic lime, terracotta dust, white or Portland cement) may be added to the coarse stuff immediately before use.
- vii. Hydraulic lime may be used to substitute completely the slaked lime, as per Architect in Charge's instructions.
- viii. Cement gauged mixes shall only be used in the most severe exposures, as per Architect in Charge's instructions.
- ix. The mortar shall be built up in layers where necessary, each layer not exceeding 12mm.
- x. The finishing coat shall match the existing surfaces and approved sample/s.
- xi. The Contractor shall ensure that in no case shall the strength of the repair mortar be larger than the strength of the adjacent fabric.

166. *Proprietary mortar repairs*

- i. The Contractor shall seek the approval of the Architect in Charge prior to the use of ready- mixed lime mortar.
- ii. Proprietary mixes shall be based on laboratory analysis comparing the repair mix characteristics to those of the masonry fabric.
- iii. The Contractor shall ensure that the mortar shall be built up in layers, as necessary, and that the total thickness of mortar repair does not exceed the limit for the finishing coat thickness as recommended by the manufacturer.

167. *Mortar application*

- i. The background shall be thoroughly cleaned to remove all dust and debris; the areas of application shall be dampened to control suction.
- ii. The mortar shall be built up and firmly applied in layers until the specified thickness is reached; the Contractor shall ensure good adhesion with no voids. A mechanical key shall be formed to the undercoat/s by combing or scratching to produce evenly spaced lines.
- iii. Each layer shall be allowed to achieve an initial set prior to the application of subsequent coats and prevented from drying out too rapidly by covering immediately with plastic sheeting and/or dampening intermittently with clean water.
- iv. The finishing mortar coat shall be formed accurately to the required planes/profiles and flush with adjacent masonry, as per Architect in Charge's instructions.
- v. The Contractor shall provide adequate protection from adverse weather until the mortar repairs have fully set.

168. *Float finish to mortar repair*

- i. The mortar shall be finished with a wood float and/or a felt faced float to give an even overall texture. The use of steel floats shall not be permitted, unless otherwise instructed by the Architect in Charge.

C30.04 *CRACK REPAIRS/ TIES/ REINFORCEMENT*

169. *Mortar repair of cracks*

- i. A proprietary lime-based mortar shall be used for the repair of cracks in masonry, whereas cementitious materials shall be used for the repair of concrete, as per relative specification section.
- ii. The cracks shall be carefully cleaned out to remove any loose debris, dust and dirt, and the joints dampened to control suction, as necessary. The mortar shall be pressed well into the joints so that they are fully filled.
- iii. The Contractor shall ensure that no mortar encroaches upon exposed faces and that the finish is flush to the existing surface.

170. *Resin injection of cracks*

- i. The epoxy resins used shall be a solvent-free resin-based products supplied in two packs (resin and hardener), having a low viscosity, and certified the manufacturer to suitably fill cracks in the region of 1mm or more as so required.
- ii. The resin shall be certified by the manufacturer to have a suitable bonding to masonry, be colourless (or have stone colour), be resistant to chemicals, and have an effective adhesion even on moist masonry surfaces.
- iii. The Contractor shall clean out all cracks to remove loose debris, dust and dirt. Any loose masonry units shall be secured, and the exposed faces kept clean and free from stains.
- iv. The material shall be easily injected into the crack structure using proprietary methods and tools and have a compressive strength greater than  $60\text{N/mm}^2$ , and a flexural tensile strength of more than  $30\text{N/mm}^2$ . The resin shall be injected using the methods recommended by the manufacturer to fully bond masonry.
- v. All masonry surfaces to be treated with epoxy resins shall be clean, free from any loose material, greasy substances, etc. as directed by the Architect in Charge.
- vi. The epoxy resins shall have a suitable viscosity, be able to seal cracks to avoid leakage of injection fluid, and fix proprietary injection nozzles, ready for injection.
- vii. After the resin has cured, the injection nozzles, any temporary crack plugging material and any temporary protective coatings shall be removed.
- viii. The cracks and injection holes shall then be pointed.

171. *Pinning*

- i. The Contractor shall carefully drill holes sloping downwards.
- ii. The holes shall be thoroughly cleaned to remove all drilling dust and debris and kept dry; the correct lengths of non-ferrous dowels shall be cut prior to the filling the holes with resin.
- iii. The holes shall be filled with sufficient resin, so that when the dowel is inserted, the resin is dispersed to achieve an effective repair.
- iv. The ends of the ties and the resin shall be kept back from the face of masonry, and exposed faces shall be kept clean and free from resin stains. Temporary plugging material and/or isolating membranes shall be used as necessary.
- v. The Contractor shall inform the Architect in Charge before starting and obtain the necessary approval for appearance of first trials before completing the remainder.
- vi. The holes shall be thoroughly cleaned out and fully filled with repair mortar to match the existing masonry units/joints in colour and texture. The mortar shall then be finished neatly and flush to the existing masonry surface.

C30.05 *POINTING AND REPOINTING*

172. *General*

- i. Pointing shall be carried out wherever pointing is absent.
- ii. Re-pointing should be limited to those areas where stone replacement has been carried out and wherever there is evidence of loss of mortar, or there is loose mortar; original mortar, where this still exists in good condition, shall in general be preserved.
- iii. Portland Cement mixes will not be used, unless otherwise instructed by the Architect in Charge.
- iv. All mixes shall be lime-based, and be compatible with the stonework in colour, strength and permeability; they will also be as close as possible in colour, composition and properties to the original mortars.
- v. Pozzolanic or similar additives shall be preferred alternatives to give strength and durability to a lime-based mixes, unless instructed otherwise.
- vi. The properties of the mix shall be improved if hydraulic lime is used instead of both hydrated lime and pozzolana; in such cases, only aggregate shall be added; no cement or other pozzolanic additives shall be necessary.
- vii. The façades are subject to direct marine exposure and a strong hydraulic lime mortar shall be preferred.
- viii. Prior to pointing/repointing, all open joints shall be cleaned from dust and loose materials, and the surrounding stones adequately wetted by de-ionised water. All pointing shall be carried out in moist, warm conditions and in layers not exceeding 10mm thickness.
- ix. Fresh pointing shall be allowed to dry slowly and be adequately protected from excessive heat and direct sunshine by a tarpaulin and should occasionally be wetted to avoid cracking.
- x. A minimum of 24 hours shall be permitted between the application of each layer of pointing.
- xi. When laying new stonework, all vertical and horizontal joints shall be adequately buttered with mortar.

173. *Preparation for repointing*

- i. The existing mortar shall be carefully removed without damaging the adjacent masonry or widening the joints using a bent spike or small hand-held chisels to a minimum depth of 25mm and never to a depth less than their width. Drilling with small masonry drills may be used to create an initial breach in a strong mortar. Fine joints shall be sawn out with hacksaw blades; impact tools shall not be used.
- ii. If mortar has failed to such an extent that the joints are largely empty, then the joints will be deep tamped and, if necessary, hand grouted to fill the voids up to the distance required for pointing.
- iii. The Contractor shall clean and dampen the joints.
- iv. The work shall commence at the top of the wall moving downwards.
- v. If joints exhibit biological soiling, a biocide should be applied prior to flushing out.
- vi. Dust and loose debris shall be removed, the joints shall then be dampened to control suction as necessary.

174. *Pointing*

- i. The Contractor shall clean and dampen the joints.
- ii. The mortar face shall be kept as far back as required to achieve the original joint width.
- iii. If the stones have retained sharp edges, joints shall be filled flush unless the original joint face was profiled in some other way. In the case of weathered edges, or where the stone has spalled off, the face of the new mortar shall be kept back such that the apparent joint width does not increase.
- iv. The required finish shall be as per original surviving masonry and as approved by the Architect in Charge.
- v. When using lime mortars, the fresh mortar shall be kept as humid as long as possible to slow down setting rate and hence avoid cracking.

175. *Stipple finish to joints*

- i. After the initial set has taken place, the Contractor shall stipple the joints with a stiff brush to remove laitance/excess fines and achieve an acceptable texture.

To be read with Preliminaries/ General Conditions

176.     *Scope of work:*

- i.        The work in this section includes the cleaning of the existing facades, parts of the internal surfaces, as well as the flagstone flooring.
- ii.       The existing fabric of the place is sensitive and must not be disfigured/ damaged in any way. The least aggressive form of cleaning method, otherwise causing loss of friable material of the stone, shall be carried out to avoid damage to the tower.
- iii.      The cleaning method to be chosen shall be slow, and easily controlled and stopped; it shall not leave behind any harmful by-products such as soluble salts, and it shall not leave behind a surface which is more uneven than the original.
- iv.      The method selected shall be dependent on the following criteria:
  - a)      Nature of the dirt to be removed
  - b)      Nature of the substrate to be cleaned
  - c)      Condition of the surface to be cleaned
  - d)      Extent of the surface to be cleaned
  - e)      Whether the surface is located indoors or outdoors
- v.       Works shall not commence prior to receipt of approval of the said method statements.

177.     *Related repair/ remedial works specified elsewhere.*

- i.        The Contractor shall ensure that the timing and sequence of works and removal of redundant fittings is agreed prior to the commencement of cleaning works.

178.     *Temporary removal of fittings*

- i.        The Contractor shall be responsible for the temporary careful removal and the accurate recording of fittings and fixtures in drawings and photographs, and shall keep them in the Building File, as indicated by the Architect in Charge.
- ii.       All items to be dismantled shall be safely stored in a pre-designated storage space and in a manner as approved by the Architect in Charge.
- iii.      Any other sound fastenings and ironmongery shall be retained for the later re-use or otherwise as indicated by the Architect in Charge.

179.     *Electrical equipment and supply*

- i.        Ensure that all electrical supplies serving external equipment have been disconnected and that, unless specified otherwise, fittings and associated cable have been removed.

180.     *Protection*

- i.        The Contractor shall provide and maintain, effective protection and sealing to all parts of the building throughout the cleaning works. The measures shall prevent:

Ingress of water, debris and dust into the building via windows, doors, and other openings.

**181. *Protective membranes/ boards***

- i. The Contractor shall use approved protective boards, sheeting, films, sealants and sealing tapes that do not stain protected materials and that can be readily removed after cleaning without damaging or staining the protected material.
- ii. The Contractor will not be allowed to use temporary fastenings into components, masonry features and fittings without prior approval by the Architect in Charge. When fixing into masonry, locate fastenings in joints. Wherever this does not result in a solid tie due to air gaps/ earth infill, between the irregular sides of the masonry blocks, such a system should be supplemented by the preparation of the base with an approved resin-based material to provide a solid anchor point to the structure.

**182. *Control and Disposal of wash water***

- i. Any wash water from cleaning methods shall be disposed of as follows and as approved by the Architect in Charge.
- ii. The wash water shall be collected by means of suitable temporary catchment boards/ sheeting, gutters, etc. and discharged to an approved drainage system. If necessary, works shall be halted during rainfall to prevent surcharging of the system.
- iii. Ensure that wash water does not build up anywhere where there is risk of it penetrating and causing damage to the building fabric. Seek instructions when any signs of damp appear internally.
- iv. Prevent solid matter and debris from entering the drainage system. Outlets, gullies, etc. shall be regularly inspected to ensure that they are not blocked.
- v. The Contractor shall ensure that the drainage systems are clear on completion of cleaning works.

**C40.01 *WORKMANSHIP***

**183. *Health and safety***

- i. The Contractor will take all the necessary precautions to protect site operative and the public from health hazards associated with the materials and procedures for the cleaning method/s used.

**184. *Condition of surfaces***

- i. Before commencing cleaning of each area, the Contractor is to ensure that surfaces are in a suitable condition to be cleaned and that walling and associated features/ components are stable and that preparatory works, such as supporting structures, removal of fixtures, etc., are complete.



185. *Testing*

- i. The Contractor shall be responsible for carrying out testing routines. The following routines shall precede and follow, all masonry cleaning operations:
- ii.
  - a) Drilling of 10mm diameter holes for depth profiling of salt content using a flat tipped tungsten carbide bit in at least two locations per elevation, as agreed with the Architect in Charge. The drilling shall take place in 2mm stages and the finely powdered drillings collected at each stage and tested separately for soluble salts. The total penetration of the holes shall be approximately 2.5cm.
  - b) Surface stone permeability shall be measured at a number of locations to establish the presence of any ions introduced into the stone by the cleaning, and in order to establish the cleaned stone's susceptibility to absorption of wind-driven rain, and associated pollutants.
  - c) Putty moulds shall be used to assess the surface roughness, for the assessment of success of the operation.

186. *Trial cleaning methods*

- i. The Contractor is to prepare trial samples for all cleaning methods in locations agreed with the Architect in Charge.
- ii. The Contractor shall inform the Architect in Charge before carrying out each trial cleaning method to enable the Architect in Charge to approve of selected testing area and be present during the preparation and execution of trial samples; the period of notice shall be agreed with the Architect in Charge.
- iii. The time, date, location, details of the all products and procedures for each sample shall be recorded by the Contractor in the Building File as per clause of the relative cleaning method.
- iv. Provide the Architect in Charge with a copy of trial sample records.

187. *Temperature conditions*

- i. No water-based cleaning procedures can be carried out when air and surface temperatures are 5 deg. Celsius or less.
- ii. Chemical cleaning agents will not be used when surface temperatures are not according to those recommended by the manufacturer.

188. *Monitoring*

- i. The Contractor shall regularly monitor effects of each cleaning procedure against the degree of cleaning established by approved trial sample/s.
- ii. The Contractor shall seek instructions immediately wherever: Disruption to the surface occurs discoloration or stains are revealed by cleaning; anticipated level of surface cleaning is not being achieved.

189. *Recording cleaning methods*

- i. The Contractor shall obtain approval prior to the commencement of any cleaning procedures.
- ii. The Architect in Charge shall be informed before carrying out each cleaning method to enable the Architect in Charge to approve of selected area and method. The period of notice shall be agreed with the Architect in Charge.
- iii. The time, date, location, details of the all products, equipment, procedures and ambient conditions, as well as other variables, for each cleaned area shall be recorded by the Contractor in the Building File as per clause of the relative cleaning method.
- iv. A photographic progress record of the cleaning procedure/s shall be recorded and kept in the Building File, copies of which shall be provided to the Architect in Charge.

## *C40.02 CLEANING METHODS*

### *190. Cleaning generally*

- i. Low-pressure washing, not exceeding *250psi*, with salt-free water shall be used for cleaning limestone. Where low-pressure washing is not sufficient, mechanical or chemical methods will only be allowed in areas as approved by the Architect in Charge.
- ii. High-pressure water washing, or grit blasting shall not be allowed.
- iii. Cleaning shall be confined to designated area surfaces. Cleaning agents or residues shall not be allowed to stray onto adjacent or protected surfaces.
- iv. The Contractor shall clean, collect and safely dispose of all debris from scaffolding, ledges, etc at the end of each day.
- v. The Contractor shall prevent marking of cleaned areas from dirt and debris splashing up from scaffold boards.
- vi. All cleaning shall commence at the uppermost section of structures to avoid washing dirt onto previously cleaned surfaces.
- vii. Chemical cleaning agents used in association with each other, shall be compatible and produced by the same manufacturer
- viii. Cleaning procedures or materials shall not be modified without approval of the Architect in Charge.
- ix. The Contractor shall seek approval from the Architect in Charge should it be necessary to take additional measures for cleaning.

### *191. Brushing and scraping*

- i. Prior to commencing any cleaning method, the Contractor shall remove loosely adhered deposits and growths using suitable corrosion resistant brushes and scrapers/spatulas that do not abrade or gouge surfaces.
- ii. The use of brushes with steel bristles shall not be permitted.

### *192. Hand held water spray cleaning*

- i. General cleaning shall be carried out by means of low pressure washing with salt-free water, possibly in combination with mechanical means such as a handheld mineral fibre brush for hard stained areas, or other to be approved by the Architect in Charge.
- ii. Mains water may be used for this operation provided that the salt content is not excessively high (conductivity test not higher than 90 S/cm). Soft water (distilled) shall not be used due to the slightly acidic carbon dioxide present which may damage the stone.
- iii. Water shall be sprayed at the lowest pressure that will soften/loosen deposits without abrading or disrupting surfaces and joints; pressure settings shall not exceed 250psi, depending on stubbornness of the soiling.
- iv. Nozzle fan shall not be less than 30° to prevent damage to the stonework
- v. The heaviest deposits shall be removed first; softened deposits shall be removed with suitable brushes that do not abrade the surfaces. Any debris shall be thoroughly rinsed.
- vi. The Contractor shall seek approval from the Architect in Charge if additional measures for cleaning are necessary.

193. *Completion*

- i. The Contractor shall obtain the Architect in Charge's approval prior to the removal of temporary protection for all cleaned area/surfaces.
- ii. Following the removal of the temporary protection, the Contractor shall thoroughly clean all glazing, window frames, doors, sills and other affected surfaces.
- iii. The Contractor shall ensure that all gutters, hoppers, down-pipes and gullies are free from obstructions and debris arising from cleaning works.
- iv. The Contractor shall give the Architect in Charge at least one week's notice before striking each stage of scaffolding, one façade at a time, so as to allow for final inspection.

**D MORTARS**

To be read in conjunction with Preliminaries/General Conditions.

*D10 GENERAL REQUIREMENTS*

*194. Scope of work*

- i. The identification of the various mortar mixes used to point the buildings and to choose adequate mixes for repair and repointing.
- ii. The choice of mortar shall relate firstly to the type and condition of the masonry and secondly to the degree of exposure.

*D10.01 MORTAR SAMPLING*

*195. General Sampling*

- i. Various mortar samples will be taken from areas indicated by the Architect in Charge. The method of analysis depends on the required information and instructed by the Architect in Charge.
- ii. The samples shall be in the form of lumps, not crumbled or powdered.
- iii. The quantity required shall normally be approximately 40-50g, or as per Architect in Charge's approval.
- iv. The Contractor shall accurately record the exact position from which the samples are taken.
- v. A minimum of three samples from the same wall shall be taken to ensure consistency of mortars.
- vi. All samples shall be clearly and thoroughly labelled.

*D20 LIME: SAND MORTARS*

*D20.01 WORKMANSHIP*

*196. Sand for lime: sand mortars*

- i. Sharp, well graded and conforming to the methods of sampling and testing and quality requirements of BS882 or BS1200, unless specified otherwise.

197. *On-site slaking of lime*

- i. The quicklime shall be delivered as fresh as possible on site and kept in dry conditions.
- ii. Slaking on site for repair works shall be carried out in a galvanised steel cold- water storage cistern.
- iii. The tank shall be filled with clean, potable water to a depth of approximately 300mm; the quicklime shall then be added.
- iv. The operation shall be carried out slowly and carefully; attention shall be given due to the reaction between water and quicklime which raises the water temperature to boiling point.
- v. The rather greasy mass of lime putty formation thereafter shall be sieved through a 5mm screen; this operation will remove unburnt lumps and the larger coagulations.
- vi. The Contractor shall leave the putty screened under a few centimetres of slaking water (lime water). The lime water shall be siphoned off when required for use.
- vii. The thin skin forming on the surface shall be left *unbroken* until the insertion of a small siphon tube to remove the water.
- viii. The slaking of the lime putty with a shallow covering of water shall be kept for a minimum of 2 weeks.
- ix. The slaked putty shall then be mixed with the chosen aggregates in the desired ratio (1:3 or similar), mechanically or by hand, turning, beating and chopping the coarse stuff.
- x. The wet *coarse stuff* shall be stored under wet underlay felt, or wet sacks, preferably in bins with air-tight lids.

198. *Ready prepared lime putty*

- i. The ready prepared lime putty shall be slaked directly from CL90 (high calcium) quicklime to BS890, using an excess of water and matured in pits/containers that allow excess water to drain.
- ii. The density of matured lime putty shall be 1.3 to 1.4kg/litre.

199. *Site storage of lime: sand mortar materials*

- i. The different sands shall be stored in different stockpiles on hard clean bases that allow free drainage.
- ii. Bags of hydrated hydraulic lime powder shall be stored in dry conditions, raised off the ground and not in contact with damp surfaces. Hydraulic lime affected by damp shall not be used.
- iii. Stored materials and other building materials shall not be intermixed or contaminated with set material or debris or other deleterious matter.

200. *Making lime: sand mortars generally*

- i. All plant and banker boards shall be kept clean at all times.
- ii. Materials shall be accurately measured by volume using clean gauge boxes or clean undamaged buckets.

201. *Site preparation of hydraulic lime: sand mortar*

- i. Hydrated lime powder shall be thoroughly mixed with sand, first in the dry state and then with water.
- ii. Ready-prepared non-hydraulic mixes shall not be allowed unless approved by the Architect in Charge.
- iii. The lime manufacturer's recommendations shall be followed for each stage of the mix. Only sufficient water shall be added to produce a workable mix.
- iv. Mortar shall only be used within time limit recommended by the lime manufacturer. Mortar that has begun to stiffen shall not be used.

## **E      APERTURES**

To be read with Preliminaries/ General Conditions

### *E10      TIMBER APERTURES*

#### *202.      Scope of Work*

- i.      The works included in this Package includes the preservation of the existing traditional timber and glazed apertures and security grilles of the Tower. Works also include for the manufacturing of new items in timber and in metal.

#### *203.      General Works*

- i.      The price quoted by Tenderers in their Tender shall include for all those materials, components, assemblies, fixtures, equipment, plant, or tests that are required to achieve the specifications included in this document, and the safety requirements referred to above.
- ii.     The Contractor shall submit standard RAL colour charts (Deutsches Institut für Gutesicherung und Kennzeichnung, Saiberger Strasse 39, D-53757 Sankt Augustin, Germany), or approved equivalent, for the specified finishing systems, for selection and approval of colour by the Architect in Charge.
- iii.    The workmanship for all elements shall be in accordance with the latest BS 8000 Workmanship on Building Sites. Where applicable, Malta Standards Authority Standards, (MSA-EN Standards), European Standards, (Harmonised EN- Standards, or European Technical Approvals), or International Standards (ISO- Standards), in this order of priority, shall be used to determine satisfactory performance.

#### *204.      Timber apertures*

- i.      The work consists in the preservation of the existing external timber arched door and windows as indicated on the drawings, or as otherwise instructed by the Architect in Charge.
- ii.     All timber and works related to timber shall be in accordance with BS1186 - Timber for and Workmanship in Joinery.

#### *205.      Timber – Treatments and finishing coats*

- i.      A traditional painted finish shall be used for the all external apertures.
- ii.     Finishing systems for all apertures shall be suitable for a severe degree of exposure as defined in BS 6150:1991.
- iii.    All surfaces shall be clean and free from dirt, grease, etc.
- iv.     The painted system shall consist of either the application of one coat solvent- based, non-lead, wood primer, particularly to end grains and joints, followed by the application of one coat undercoat, and two coats solvent-



based eggshell finish; or alternatively one coat preservative primer, part 1 of a flexible, weather-resistant, 3- part paint system to provide longer lasting protection of exterior woodwork. The top finishing system shall consist of two coats exterior flexible undercoat to provide longer lasting protection for exterior woodwork, followed by one coat exterior eggshell finish, giving the timber a long-lasting protection; this final coat contains a fungicide that inhibits mould growth on the paint film.

- v. Priming and painting shall comply with BS 6150:2006. Any components that have deteriorated or have damaged priming shall be re-primed prior to installation.
- vi. All proposed systems shall be applied in strict accordance with manufacturer's instructions.
- vii. All technical details, proposed methods of application, and colour samples must be submitted with the tender.

*E20 WROUGHT IRON SECURITY GRILLES*

*206. Scope of works*

- i. Works related to such material shall relate to all onsite security grilles to be repaired, treated and/ restored.

*207. Finishing of Wrought Iron Elements*

- i. All elements shall be protected against corrosion in an exposed polluted and coastal external environment, defined in accordance with BS5493, by any suitable means that can guarantee a minimum life to first maintenance of 10 years.
- ii. All corrosion protection work shall be inspected by the Architect in Charge, and any areas deemed defective will have to be re-cleaned, blasted, primed and painted again, at the expense of the Contractor.
- iii. The finish paint thickness shall be at least 50 microns. The Contractor shall submit standard RAL colour charts (Deutsches Institut für Gütesicherung und Kennzeichnung, Saiberger Strasse 39, D-53757 Sankt Augustin, Germany), or approved equivalent, for the specified finishing systems, for approval by and selection of colour by the Architect in Charge.
- iv. Surfaces to be finish coated shall be clean, dust free and suitably dry, with previous coats adequately cured. Where multiples coats of the same material have to be applied, different tints shall be used to assist the checking of complete coverage. The penultimate coat shall have the colour recommended by the paint manufacturer, in order to ensure it suits the top coat colour. The finish shall be smooth and even, of uniform thickness and colour, and free from defects. During application, the thickness of each coat shall be checked with a wheel or comb gauge in accordance with BS EN ISO 2808. After each coat has dried, the total accumulated dry film thickness, measured by a magnetic or electromagnetic meter.

**F      ELECTRICAL WORKS**

**Introduction:**

This tender is for the supply and installation of a pair of movement detectors and the supply and installation of a plug-in luminaire, the supply only of two other luminaires and the repair of the electrical installation at the Dwejra Tower in Gozo. The tower is totally dependent on solar energy for its electricity supply requirements and as such energy saving and the use of energy efficient equipment is crucial.

**Scope of works:**

- Supply and install two movement detectors to control the lighting and power circuits in the stairs and the lower room such that any lighting and other equipment connected will be automatically switched off after a predetermined time when the room is not in use. For this purpose the movement detectors are to include an adjustable timer and they are to be connected to operate in tandem. One of the detectors is to be located at the top of the stairs to switch on the lighting as soon as a person starts going down the stairs. The other detector is to be located in the lower room to ensure that the electricity supply is not switched off when the room is occupied. Contactors are to be used between the movement detectors' contacts and the lighting/power circuits to ensure that the lighting and power is switched ON and OFF by means of the contactor contacts and not by the movement detectors' contacts. No chasing or drilling in the stonework is allowed in order to carry out this installation.
- Supply and installation of a plugin wall mounted decorative luminaire along the stairs leading to the basement room. The luminaire should have an LED light source with an light output of 500 to 600 lumens with a colour temperature of 2700K. The luminaire should be supplied with a 3 core flexible lead and a 13A plug.
- Supply of two pedestal (approx. 2m high) mounted decorative luminaires each with an LED light source with an light output of 500 to 600 lumens with a colour temperature of 2700K. The luminaires should be supplied with a 3 core flexible lead and a 13A plug.
- The upgrading and rendering safe of the electrical installation within the two rooms at the Dwejra Tower mainly by removing any loose wires and cables and reinstalling them in the proper way.
- Issue of a test certificate signed by a licensed wireman confirming that he has tested the electrical installation and confirms that it is according to the IET regulations and the local ESR.

**Descriptive literature:**

Prospective bidders are at liberty to submit a number of alternative offers for the luminaires however they must submit a descriptive leaflet (picture of luminaire and brief technical specification) showing each luminaire offered.

## **G      PHOTOVOLTAIC PANELS**

### **Introduction:**

Dwejra tower depends on a Photovoltaic (PV) installation for its electrical needs. The PV installation consists of eight PV modules rated in total at 1kWp. The tower has only two rooms inside, one just inside the main entrance and another directly below. There is also a small room on the roof where the PV equipment and batteries are installed.

The electrical installation consists of three low power lamps and a 250W projector which is not in use continually.

The objective of this tender is to increase the battery capacity and to install movement detectors to automatically switch off lighting and equipment in the lower room in order to have more electrical energy available when really required.

### **Existing equipment:**

- 8 in Number PV modules which have been in service for around seven years.
- A battery charger type Victron Energy solar charger type 12/24V 50A
- Four in number 12V batteries consisting of two pairs of two batteries in series with each pair connected in parallel such that the output is at 24V. The batteries are type VARTA LFD 180 180Ah (C20) 153Ah (C5) RC377 M1 CCA(EN) 1000A MCA 1250A 930 180 100 B91 2. These batteries are practically still new.
- An inverter type ARCA (AJ Sine Wave inverter)

The whole installation is in working order.

### **Scope of works:**

- To test the PV modules to ensure that they are producing their design yield. A test certificate with detailed test results endorsed by a warranted electrical engineer is required.
- To enclose the inverter in a well-ventilated plastic box to ensure free air circulation around the inverter while preventing dust from settling within it and causing damage.
- To supply and connect a set of two exactly similar (including make) batteries to those already existing at Dwejra Tower to have three pairs of two 12V batteries in series and as a result increasing the storage capacity. The two batteries must be fully charged when connected. Heavy gauge leads are to be included.
- Clean the existing batteries, the charger, the inverter and the various associated switching devices which are all grouped together in the room on the roof.
- Supply and install two movement detectors to control the lighting and power circuits in the lower room such that any lighting and other equipment connected will be automatically switched off after a predetermined time when the room is not in use. For this purpose the movement detectors are to include an adjustable timer and they are to be connected to operate in tandem. One of the detectors is to be located at the top of the stairs to switch on the lighting and equipment as soon as a person starts going down the stairs. The other

detector is to be located in the lower room to ensure that the electricity supply is not switched off when the room is occupied. Contactors are to be used between the movement detectors' contacts and the lighting/power circuits to ensure that the lighting and power is switched ON and OFF by means of the contactor contacts and not by the movement detectors' contacts. No chasing or drilling in the stonework is allowed in order to carry out this installation.

- Issue of a test certificate signed by a warranted electrical engineer confirming that all the equipment in question is in working order.

## **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.