Ministry for Sustainable Development, the Environment and Climate Change

Permanent Secretariat Offices
6 Qormi Road
St. Venera SVR 1301
Malta
Telephone: (356) 22926200
Email: contracts.msdec@gov.mt

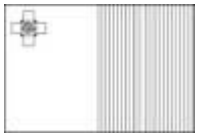
Opening Date: **22nd AUGUST 2014**

Closing Date: **TUESDAY 16TH SEPTEMBER 2014 @ 10.00am**

SUBJECT: **SUPPLY, DELIVERY, INSTALLATION AND COMMISSIONING OF A MOBILE OFFICE AND FURNITURE PRODUCED WITH ENVIRONMENTALLY FRIENDLY MATERIALS AND PROCESSES FOR THE PROJECT ON THE STUDY AND SUSTAINABLE CONSERVATION OF VARIETIES OF LOCAL PLANTS**

TENDER DOCUMENT: **MSDEC/Advert №. 72/2014**

Participation in this tender is free of charge



Rural Development Programme for Malta
2007 – 2013

Axis 2 – *Improving the Environment and the Countryside*
Project Part-financed by the European Union
The European Agricultural Fund for Rural Development
Co-financing Rate: 80% European Union, 20% Government of Malta

Europe Investing in Rural Areas

A site visit will be held at on Tuesday 9th September 2014 at 09.00am
Location address for the site visit is the following:
Plant Biotechnology Centre,
Annibale Preca Street,
Lija LJA 1915

SUPPLY, DELIVERY, INSTALLATION AND COMMISSIONING OF A MOBILE OFFICE AND FURNITURE PRODUCED WITH ENVIRONMENTALLY FRIENDLY MATERIALS AND PROCESSES FOR THE PROJECT ON THE STUDY AND SUSTAINABLE CONSERVATION OF VARIETIES OF LOCAL PLANTS

1.0 Scope of Tender

1.1 Introduction

1.1.1 This Tender, which is being issued by Plant Health Directorate hereinafter referred to as "the Contracting Authority", is for the Supply, Delivery, Installation and Commissioning of a Mobile Office and furniture produced with environmentally friendly materials and processes for the project on the Study and sustainable conservation of varieties of local plants.

1.1.2 A sample tender document in PDF format is available for viewing and downloading Free of Charge on the Ministry for Sustainable Development, the Environment and Climate Change website, **http://www.msdec.gov.mt**

1.1.3 This tender document is available for collection free of charge from the MSDEC Procurement and Supplies Section, 6 Qormi Road St. Venera SVR 1301, on any working day between 8.30 a.m., and 12.00 noon

1.1.4 Prospective bidders are to ensure that their Tender Document shall contain no changes or alterations, other than those made in accordance with the instructions issued by the Contracting Authority (which are issued as clarification notes or addenda) or those necessitated by errors on the part of the tenderer. In this case, bidders shall ensure that any corrections are properly and duly crossed, dated and initialled in ink by the person signing the tender.

1.2 Tender Documentation

1.2.1 Each submission for Tender shall clearly indicate the details of the tenderer responsible for such activity and the rates/prices, inclusive of VAT and all other charges as may be applicable. The contract shall start on the date of signature of the Contract Agreement by the selected contractor.

1.2.2 A form entitled **"Schedule of Rates/Prices"** is also attached with the Tender Document. Prospective bidders are requested to complete the form, giving the rates/prices in EURO for each item as indicated, inclusive of VAT and all taxes and any other charges as applicable. This form must be filled in and submitted with the tender document. Prospective bidders shall not at any time of the contract period request a revision of the rates/prices. **Failure to fill in the form, or a form with incomplete information, or a form containing ambiguous financial information (e.g. prices, totals etc.) shall disqualify the tender submission.**

1.2.3 A form entitled "**Tenderer's Details Form**" is attached with the Tender Document. Prospective bidders are requested to fully complete the form, and submit it with the Tender Document.

1.2.4 Tenderers shall fully complete parts A, B and C of the attached "**Tender Form**" as required, also confirming the tenderer's undertaking that the offer shall not be retracted or withdrawn for a period of three (3) months from the closing date of the offer. **Failure to submit this form completed in all respects, shall disqualify the bid.**

1.2.5 A form entitled "**Data on Joint Venture/Consortium**" is attached with the Tender Document. Prospective bidders are requested to complete the form, and submit it with the Tender Document if they are planning to bid as a Joint Venture / Consortium. In the event that a prospective bidder does not plan to bid as a Joint Venture/Consortium, this form need not be completed.

1.2.6 A form entitled "**Sub-Contracting**" is also attached with the Tender Document. Prospective bidders are requested to complete the form, and submit it with the Tender Document if they are planning to Sub-Contract the works or any part of the works listed in the Tender Document. In the event that a prospective bidder does not plan to sub-contract the works or any part thereof, this form need not be completed.

1.2.7 A form entitled "**Statement on Conditions of Employment**" is attached with the Tender Document. Prospective bidders are requested to complete the form, and submit it with the Tender Document.

1.2.8 Tenderers are also requested to submit with their tender offer, detailed technical specifications, the User Manual (Technical Illustrated Literature) with full instructions, a certificate of local company representation (in case of foreign bidders) and a signed declaration that equipment and parts are guaranteed as per clause 8.5.1.3 and after-sales services are provided**.** All documents provided shall be written in English language. **Failure to comply with this clause shall render the tender offer null.**

2.0 Tender Process

2.1 General Instructions (Pre Submission of Tenders)

2.1.1 In submitting a Tender, the tenderer accepts in full and its entirety, the content of this Tender Document, including subsequent Clarifications issued by the Contracting Authority, whatever its own corresponding conditions may be, which it hereby waives. Tenderers are expected to examine carefully and comply with all instructions, forms, contract provisions and specifications contained in this Tender Document.

2.1.2 No account shall be taken of any reservation in the Tender as regards the Tender Document; any disagreement, contradiction, alteration or deviation shall lead to the Tender offer not being considered further.

2.1.3 The Tender Evaluation Committee shall, after having obtained approval by the Departmental Tenders Committee, request rectifications in respect of incomplete/non-submitted information pertinent to the documentation as outlined in sub-clauses 1.2.3, 1.2.5, 1.2.6 and 1.2.7 **only**. Such rectification/s shall be submitted within two (2) working days from notification, and shall be subject to a non-refundable administrative penalty of €50. **Failure to comply shall result in the Tender offer not being considered further.**

2.1.4 Tenderers bear the sole liability of examining with appropriate care the Tender documents, including those design documents available for inspection, and any clarification notes to the Tender documents issued during the Tendering period, and for obtaining reliable information with respect to conditions and obligations that may in any way affect the amount or nature of the Tender or the execution of the works. In the event that the tenderer is successful, no claim for alteration of the Tender amount shall be entertained on the grounds of errors or omissions in the obligations of the tenderer described above.

2.1.5 Tenderers shall promptly notify the Procurement and Supplies Section of the Ministry for Sustainable Development, the Environment and Climate Change of any ambiguity or discrepancy that they may discover upon examination of the Tender Document.

2.1.6 Tenderers requiring clarification or interpretations of the Tender Document shall make a written request via e-mail (email address: contracts.msdec@gov.mt) **up to Wednesday 10th September 2014 till 10.00am**. **Any request after this date and time shall not be accepted.**

Reply regarding queries or clarifications and interpretation may be viewed from web site http://www.msdec.gov.mt

Bidders shall ascertain, prior to submitting the Tender that he has noted all queries issued, and shall acknowledge their receipt in his tender

2.1.7 Any interpretations, corrections or changes to the Tender Document by the Contracting Authority shall be made by an official addendum. Interpretations, corrections or changes made in any other manner shall not be valid, and Tenderers shall not rely upon such interpretations, corrections and changes.

2.1.8 Addenda will be uploaded to website http://www.msdec.gov.mt

2.1.9 No addenda shall be issued later than three (3) working days prior to the date of receipt of Tenders except an addendum postponing the date for receipt of Tenders or withdrawing the request for tenders.

2.1.10 The Contracting Authority may, at its own discretion, extend the deadline for submission of Tenders to give tenderers sufficient time to take clarification notes into account when preparing their Tenders.

2.1.11 The tenderer shall provide all documents required by the provisions of the Tender document. All such documents, without exception, shall comply strictly with these conditions and provisions, and contain no alterations made by the tenderer.

2.2 Eligibility

2.2.1 Participation in tendering is open on equal terms, to all natural and legal persons of the member States of the European Union, the beneficiary country, and any other country in accordance with Regulation 76 of the Public Procurement Regulations.

2.2.2 Natural persons, companies or undertakings who fall under any of the conditions set out in Regulation 50 of the Public Contracts Regulations, 2010 (Legal Notice 296 of 2010) shall be excluded from participation in the award of the Contracts. Tenderers or candidates who have been guilty of making false declarations shall also incur financial penalties representing 10% of the total value of the contract being awarded.

2.2.3 All materials, equipment and services to be supplied under the Contract must originate in an eligible country. For these purposes, “origin” means the place where the materials and/or equipment are mined, grown, produced or manufactured and/or from which services are provided.

2.3 Multiple Tenders

2.3.1 A tenderer may submit multiple tender offers.

2.3.2 A company may not tender for a given contract both individually and as a partner in a joint venture / consortium.

2.3.3 A company may not tender for a given contract both individually / partner in a joint venture / consortium, and at the same time be nominated as a subcontractor by any other tenderer, or joint venture / consortium.

2.3.4 A Company may act as a sub-contractor for any number of tenderers, and joint venture/consortia, provided that it does not participate individually or as part of a joint venture/consortium, and that the nominations do not lead to a conflict of interest, collusion, or improper practice.

2.4 Tender expenses

2.4.1 The Tenderer shall bear all costs associated with the preparation and submission of the Tender.

2.4.2 The Contracting Authority shall neither be responsible for, nor cover any expenses or losses incurred by the Tenderer through site visits and inspections or any other aspect of his/her Tender.

2.5 Labour Law

2.5.1 Particular attention is drawn to the conditions concerning the employment of labour in Malta and the obligation to comply with all regulations, rules or instructions concerning the conditions of employment of any class of employee.

2.6 Law

2.6.1 By submitting their Tenders, tenderers are accepting that this procedure is regulated by Maltese Law, and are deemed to know all relevant laws, acts and regulations of Malta that may in any way affect or govern the operations and activities covered by the Tender and the resulting contract.

2.7 Language of Tenders / Preparation of Tenders

2.7.1 The Tender and all correspondence and documents related to the Tender exchanged by the tenderer and the Contracting Authority shall be written in English.

2.7.2 Supporting documents and printed literature furnished by the tenderer may be in another language, provided they are accompanied by an accurate translation into English. For the purposes of interpretation of the Tender, the English language shall prevail.

2.7.3 The Tenderer’s submission shall be typed in, or handwritten in indelible ink and signed by the person listed in the Tenderers Details Form enclosed with the Tender Document. Any pages on which entries or correction to his/her submission have been made shall be initialled by the person listed in the Tenderers Details Form. All pages shall be numbered consecutively by hand, machine or in any other way acceptable by the Contracting Authority.

2.7.4 The Tender shall contain no changes or alterations, other than those made in accordance with instruction issued by the Contracting Authority (issue as clarification notes) or necessitated by errors on the part of the tenderer. In the latter case, corrections shall be initialled by the person signing the tender.

2.7.5 The Tender shall be rejected if it contains any alteration, tampering, addition or deletion to the Tender documents not specified in a clarification note issued by the Contracting Authority.

2.8 Tender Rates/Prices

2.8.1 The Tender rates/prices shall cover the whole of the works/supplies/services as described in the Tender Document.

2.8.2 The tenderer shall provide a breakdown of the overall rates/prices in Euro (€)

2.8.3 Tenderers shall quote all components of the price inclusive of VAT, taxes, customs and import duties and any discounts, as applicable. Except as may be provided for in the Contract, no payment shall be made for items which have not been costed. **Rates and prices shall be entered against each item in the bill of quantities/schedule of prices/rates, or otherwise specifically declared as 'Nil' or 'Included' in writing. The price of any item in the bill of quantities/schedule of prices/rates, against which no interpretable entry in writing has been made (i.e. either left blank or marked with a dash or other such unreadable signs), wilfully or otherwise, shall be deemed 'Nil' or 'Included' in other items of the bill of quantities. Requests for correction of such entries during the execution of the contract shall not be entertained.**

2.8.4 Different options are to be clearly identifiable in the technical and financial submission; thus, Tenderers shall submit a **separate** Tender Form marked 'Option 1', 'Option 2' etc. for each individual option, clearly specifying the rates/prices of the relative option. Bidders shall ensure that the Tender Forms submitted are complete in all respects. **Failure to abide by this clause shall be treated as follows:**

- **When a single Tender Form is submitted with one or more options included in one Tender Form, the whole tender offer shall be rejected and rendered null;**

- **When one or more Tender Forms are submitted, either to cover one option or to cover a number of options and one or more of these Tender Forms are not completed properly and in all respects, the options relative to the invalid Tender Forms shall be rejected and the options rendered null. The evaluation committee shall proceed to evaluate only the option or those options with a fully completed and valid Tender Form.**

2.8.5 If the tenderer offers a discount, the discount shall be absorbed in the rates of the Bill of Quantities / Schedule of Rates / Schedule of Prices.

2.8.6 The rates/prices of the Contract shall include all of the works to be provided. The rates/prices quoted are fixed and not subject to revision or escalation in costs, unless otherwise provided for in the Special Conditions.

2.9 Currencies of Tender and Payments

2.9.1 The currency of the Tender is the Euro (€). All sums in the breakdown of the overall rates/price, in the questionnaire and in other documents shall be expressed in Euro (€).

2.9.2 The Contractor shall submit VAT invoices in accordance with the Twelfth Schedule of the VAT Act. Invoices shall only be registered as valid if in full compliance with this clause and the Contracting Authority shall not be held liable for delays in payments due should the Contractor have submitted an invalid invoice. Invoices submitted not in accordance with this requirement shall not be processed for payment and the Contracting Authority reserves the right to request the Contractor to re-issue the invoice accordingly.

2.9.3 The invoices submitted by the contractor shall include the Letter of Acceptance reference number and any other relevant details such as the Advert Number.

2.9.4 Payment of bills shall be stopped whenever, in the opinion of the Contracting Authority, the Contractor is under penalty for breach of any conditions of the Contract.

3.0 Tender Submittals

3.1 Method of Submissions

3.1.1 Tenders shall be submitted at the Procurement and Supplies Section, MSDEC Permanent Secretariat Offices, No. 6 Qormi Road St. Venera SVR 1301, by the time and date indicated on the Government Gazette.

Tenders are to be delivered to the following address:

Procurement and Supplies Section

Ministry for Sustainable Development, the Environment and Climate change

No 6 Qormi Road

St. Venera SVR 1301

Malta

Late submissions shall not be accepted. The proposal for this Tender shall be closed in a sealed package with the **Advert Number and Closing Date clearly marked** on it and submitted either by recorded delivery (official postal/courier service) or hand delivered and deposited in the Tender Box at the Procurement and Supplies Directorate of the Ministry for Sustainable Development, the Environment and Climate Change. **Any other method of submission shall NOT be accepted.**

3.1.2 By casting the Tender, the tenderer shall be deemed to be in a position to carry out all the services specified in this Tender Document.

3.1.3 Each Tenderer shall ascertain, prior to submitting his/her Tender, that he/she has received all addenda issued and shall acknowledge their receipt in his/her Tender.

3.1.4 Tenderers shall quote their VAT Registration Number in the appropriate space provided in the Tenderers' Details Form. Moreover, prospective bidders shall be bound to conform in all respects to the VAT legislation and regulations.

3.1.5 Tenderers are required to submit the following set of documents with their tender submission and for each option submitted (if any):

a) **Schedule of Rates/Prices** as per Clause 1.2.2

b) **Tenderer's Details Form** as per Clause 1.2.3

c) **Tender Form** as per Clause 1.2.4

d) **Data on Joint Venture/ Consortium Form (if applicable)** as per Clause 1.2.5

e) **Sub-contracting Form (if applicable)** as per Clause 1.2.6

f) **Statement on Conditions of Employment** as per Clause 1.2.7

g) **Technical Literature etc.** as per Clause 1.2.8

The information collected on this form shall be processed in accordance to the Data Protection Act 2001. The contents of this document are confidential and intended solely for the use of this organization, and shall not be disclosed or copied without your consent, to anyone outside the Company unless the law permits us to.

3.1.6 Any information and details submitted by the Contractor shall be processed with the Freedom of Information Act [Chapter 496] of the Laws of Malta and the Data Protection Act [Chapter 440] of the Laws of Malta.

3.1.7 **All tenders submitted including catalogues, illustrations and literature shall be bound. The Contracting Authority shall bear no responsibility for the loss of any documents which are not bound with the tender offer**.

3.2 Late Tenders

3.2.1 All Tenders received after the deadline for submission specified in the contract notice or these instructions shall be kept by the Contracting Authority. The associated guarantees shall be returned to the tenderers (if any).

3.2.2 No liability shall be accepted for late delivery of Tenders. Late Tenders shall be rejected and shall not be evaluated.

3.3 Alteration or Withdrawal of Tenders

3.3.1 Tenderers may alter or withdraw their tenders by written notification prior the deadline for submission of tenders. No tenders may be altered after this deadline.

3.3.2 Any notification of alteration or withdrawal shall be prepared, sealed, marked and submitted in accordance with Clause 3.1 and the envelope must also be marked 'Alteration' or 'Withdrawal' as appropriate.

3.4 Cost of preparing tender

No cost incurred by the tenderer in preparing and submitting the tender are reimbursable. All such cost will be borne by the tenderer.

3.5 Ownership of tenders

The contracting Authority retains ownership of all tenders received under this tender procedure. Consequently, tenderers have no rights to have their tenders returned to them.

4.0 Opening and Evaluation of Offers

4.1 Opening of Tenders

4.1.1 Tenders shall be opened in public session on the date and time indicated in the Tender advert and in the Tender Document, at the Procurement and Supplies Section premises by the Tender Opening Board. The Board shall draw up a 'Schedule of Tenders Received' which shall be published on the notice board at the Procurement and Supplies Section and shall also be available for public viewing.

4.1.2 Reductions or alterations to tender rates/prices made by tenderers after submission shall not be taken into consideration during the analysis and evaluation of Tenders.

4.1.3 'Schedule of Tenders Received' can also be downloaded from website **http://www.msdec.gov.mt**

4.2 Secrecy of Procedure

4.2.1 After the opening of the Tenders, no information about the examination, clarification, evaluation or comparison of Tenders or decisions about the Contract award shall be disclosed before the notification of award.

4.2.2 Information concerning checking, explanation, opinions and comparison of Tenders and recommendations concerning the award of contract, shall not be disclosed to Tenderers or any other person not officially involved in the process unless otherwise permitted or required by law.

4.2.3 Any attempt by a tenderer to approach any member of the Evaluation Committee / Contracting Authority directly during the evaluation period shall be considered legitimate grounds for disqualifying his/her Tender.

4.3 Clarification of Tenders

4.3.1 When checking and comparing Tenders, the Evaluation Committee may, after obtaining approval from the Departmental Contracts Committee, ask a tenderer to clarify any aspect of his/her tender.

4.3.2 Such requests and the responses to them shall be made by email or fax. They may in no circumstances alter or try to change the rates/price or content of the Tender, except to correct arithmetical errors discovered by the evaluation committee when analysing tenders.

4.4 Tender Evaluation Process

4.4.1 **Part 1, Administrative compliance:** The Evaluation Committee shall check the compliance of Tenders with the instructions given in the Tender Document.

The Evaluation Committee shall, after having obtained approval from the Departmental Tenders Committee, request rectification in respect of incomplete/non-submitted information pertinent to the documentation as outlined in clause 2.1.3 of this Tender document. Such rectifications shall be submitted within two (2) working days from notification, and shall be subject to a non-refundable administrative penalty of €50**. Failure to comply shall result in the Tender offer not being considered any further.**

4.4.2 **Part 2, Eligibility and Selection compliance:** Tenders which have been considered administratively compliant shall be evaluated for admissibility as outlined below:

a) Eligibility Criteria
b) Technical Compliance
c) Financial Evaluation

4.5 Correction of Arithmetical Errors

4.5.1 Admissible Tenders shall be checked for arithmetical errors by the Evaluation Committee. Errors shall be corrected as follows:

a) Where there is a discrepancy between amounts in figures and in words, the amount in words shall prevail;

b) Where there is a discrepancy between a unit rates/price and the total amount derived from the multiplication of the unit rates/price and the quantity, the unit rates/price as quoted shall prevail.

4.5.2 The amount stated in the Tender shall be adjusted by the Evaluation Committee in the event of error, and the tenderer shall be bound by that adjusted amount. In this regard, the Evaluation Committee shall seek prior approval of the Departmental Contracts Committee to communicate the revised rates/prices to the tenderer. If the tenderer does not accept the adjustment, his/her Tender shall be rejected and his/her tender guarantee forfeited (if any).

4.5.3 When analysing the Tender, the Evaluation Committee shall determine the final Tender rates/prices after adjusting it on the basis of clause 4.5.1.

5.0 Contract Award

5.1 Criteria for Award

5.1.1 The sole award criterion shall be the rates. The contract shall be awarded as a whole to the cheapest priced Tender satisfying the administrative and technical criteria.

5.2 Right of the Contracting Authority to accept or reject any Tender.

5.2.1 The Contracting Authority reserves the right to accept or reject any Tender and/or to cancel the whole Tender procedure and reject all Tenders. In such an event, the Contracting Authority reserves the right to initiate a new invitation to Tender.

5.2.2 In the event of a Tender procedure's cancellation, tenderers shall be notified by the Contracting Authority. If the Tender procedure is cancelled before the opening of any envelope of any Tender the sealed envelopes will be returned, unopened to the tenderers. The Contracting Authority may also opt to refund the cost of the tender document to the prospective bidders who had procured a tender document.

5.2.3 Cancellation may occur where:

a) the Tender procedure has been unsuccessful, namely where no qualitatively or financially worthwhile Tender has been received or there has been no response at all;

b) the economic or technical parameters of the project have been fundamentally altered;

c) exceptional circumstances or force majeure render normal performance of the project impossible;

d) all technically compliant Tenders exceed the financial resources available;

e) there have been irregularities in the procedure, in particular where these have prevented fair competition.

5.2.4 **In no circumstances shall the Contracting Authority be liable for damages, whatever their nature (in particular damages for loss of profits) or relationship to the cancellation of a Tender, even if the Contracting Authority has been advised of the possibility of damages. The publication of a contract notice does not commit the Contracting Authority to implement the programme or project announced.**

5.3 Notification of Award of Contract

5.3.1 Prior to the expiration of the period of validity of Tenders, the Contracting Authority shall notify the successful tenderer, in writing, that his/her Tender has been recommended for award by the Evaluation Committee, pending any appeal being lodged in terms of Part II, Regulation 21 of the Public Contracts Regulations, a copy of which is reproduced hereunder.

5.3.2 Unsuccessful bidders shall be notified with the outcome of the evaluation process, and shall be provided with the following information:

a) the criteria for award;

b) the name of the successful tenderer;

c) the recommended price if the successful bidder;

d) the deadline for filing a notice of objection (appeal);

e) the deposit required if lodging an appeal.

5.3.3 The recommendations for award shall be published on the notice board of the Procurement and Supplies Directorate. It shall be the obligation of the Tenderer to periodically check that such recommendations have been so published.

5.3.4 Tenderers will be informed by the Contracting Authority of the publication of the award via the e-mail address submitted by Tenderers in Section B of the Tender Form. Tenderers are obliged to reply ***immediately*** by sending a return receipt via e-mail in order to confirm that the original message was received. If the reply is not sent by tenderers, the Contracting Authority will not be held responsible for any failure on the Contractor's part to present any eventual appeal once the e-mail was sent to the address submitted by tenderers as detailed in Section B of the Tender Form.

5.4 Contract Signing and Performance Guarantee

5.4.1 After the lapse of the appeals period, and pending that no objections have been received and/or upheld, the successful tenderer may be invited to clarify certain contractual questions raised therein. Such clarification will be confined to issues that had no direct bearing on the choice of the successful tender. The outcome of any such clarifications will be set out in a Memorandum of Understanding, to be signed by both parties and incorporated into the contract.

5.4.2 At any time prior to the award of the tender, the Contracting Authority reserves the right to request the tenderer to provide a certificate issued by the Employment and Training Corporation, indicating the number and details of employees duly registered with Corporation. In those cases where tenderers intend to sub-contract the works, they shall produce an original or authenticated certificate from ETC which indicates the respective registration number of the nominated subcontractors. The certificate shall be required for the sole purpose of confirming that the tenderer possesses, or has available, adequate human resources to perform the contract to a timely and successful completion. **Any tenderer who fails to provide the requested certificate/s when requested to do so, shall be disqualified from further consideration towards the award of the contract.**

5.4.3 In submitting this tender, the tenderer is certifying his/her acceptance in full of all the tender terms and conditions, including all addenda issued by the Contracting Authority prior to the closing date for the submission of tender offers. The successful tenderer may, upon the issue of the Letter of Intent, be requested to endorse all sheets of the tender document and any addenda issued during the tenders' submission period as a means of confirmation of his/her acceptance of all the contents thereof, and he/she shall do so without any reservations or conditions. **Requests to waive particular terms, conditions or specifications, shall not be entertained and may result in termination of the contract.**

5.4.4 The Contracting Authority shall issue a letter of intent stipulating the date from which the successful tenderer shall call at the Procurement and Supplies Directorate, within five (5) working days, to sign and date the contract. The Contract would not be signed unless the successful tenderer furnishes personally the performance guarantee (applicable to contracts exceeding €10,000 in value). On signing of the Contract by the Contracting Authority the successful tenderer will become the Contractor and the contract will enter into force.

5.4.5 Before the Contracting Authority signs the contract with the successful tenderer, the successful tenderer may be requested to provide the documentary proof or statements required to show that it does not fall into any of the exclusion situations listed in Clause 7 of the Tender Form. The above mentioned documents must be submitted by every member of a Joint Venture/Consortium (if applicable).

5.4.6 If the selected tenderer fails to sign and return the contract, other required documentation, and any guarantees required within the prescribed 5 working days' period, the Contracting Authority may consider the acceptance of the tender to be cancelled without prejudice to the Contracting Authority's right to seize the guarantee (Bid Bond) where applicable, claim compensation or pursue any other remedy in respect of such failure, and the successful tenderer will have no claim whatsoever on the Contracting Authority.

The tenderer whose tender has been evaluated as second cheapest / Second most advantageous may be recommended for award, and so on and so forth.

5.4.7 Only the signed contract will constitute an official commitment on the part of the Contracting Authority, and activities may not begin until the contract has been signed by the Contracting Authority and the successful tenderer.

5.4.8 The performance guarantee, applicable only to contracts exceeding €10,000 in value, referred to in the General Conditions is set at 10% of the amount of the contract and must be presented in the form attached to

this tender document. The performance guarantee shall be released within 30 days of the signing of the Contractor's Performance Report by the Officer in charge of the contract, unless the Special Conditions provide otherwise.

5.5 Reproduction of Regulation 21, Part II of the Public Procurement Regulations 2010

5.5.1 Right of Recourse

(1) Where the estimated value of the public contract exceeds twelve thousand euro (€12,000) and is issued by an authority listed in Schedule 1, any tenderer or candidate concerned shall have a right to make a complaint to the Review Board in accordance with this regulation.

(2) (a) The contracting authority shall be obliged to issue a notice and affix an advertisement, in a prominent place at its premises, indicating the awarded public contract, the financial aspect of the award and the name of the successful tenderer. The contracting authority shall, by electronic means or by fax, inform the tenderer or candidate concerned of the publication of the award. The contracting authority shall be precluded from concluding the contract during the period allowed for the submission of appeals.

(b) The award process shall be completely suspended if an appeal is eventually submitted.

(3) Any tenderer or candidate concerned who is aggrieved by the award indicated by the contract authority may, within five working days from the publication of the notice, file a letter of objection, together with a deposit, with the contracting authority, clearly setting forth any reason for his complaint. The deposit to be paid in respect of tenders valued at less than forty-seven thousand euro (€47,000) shall be four hundred euro (€400), while those between forty-seven thousand euro (€47,000) and one hundred and twenty thousand euro (€120,000) shall be 0.5% of the estimated value of the tender, with a minimum deposit of four hundred euro (€400). The letter by the complaining tenderer shall be affixed on the notice board of the contracting authority and shall be brought to the attention of the recommended tenderer.

(4) After the expiry of the period allowed for the submission of a complaint, the contracting authority shall deliver the letter of complaint, the deposit receipt and all documents relating to the public contract in question to the Review Board who shall examine the matter in a fair and equitable manner. In its deliberation the Review Board shall have the authority to obtain, in any manner it deems appropriate, any other information not already provided by the contracting authority. The Review Board shall determine the complaint by upholding or rejecting it. The written decision of the Review Board shall be affixed on the notice board of the contracting authority and copies thereof shall be forwarded to the Director of Contracts and all the parties involved.

(5) The tenderer or candidate concerned who is not satisfied with the decision granted by the Review Board may refer the matter to the Court of Appeal (Inferior Jurisdiction) in terms of article 41(6) of the Code of Organization and Civil Procedure within a period of sixty days. Such recourse however may not delay the Head of the contracting authority from implementing the Review Board's decision.

6.0 General Conditions

The full set of General Conditions for Supply / Works / Services Contracts (Versions 1.04 dated 31 December 2013) can be viewed/downloaded from

www.contracts.gov.mt/conditions

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.

7.0 Contract Special Conditions

7.1 This Agreement shall be read, governed and construed in accordance with the Laws of Malta and any controversy in relation thereto shall be submitted to final and binding arbitration in terms of Part IV of the Arbitration Act (Chapter 387 of the Laws of Malta)

7.2 Any dispute, controversy or claim arising out of or relating to this contract, or breach, termination or invalidity thereof, shall be settled by arbitration in accordance with the rules of the Malta Arbitration Centre as at present in force. Any reference in the attached General Conditions to other arbitration procedures shall not apply.

7.3 The acceptance of the Tender under this contract shall not hinder the Contracting Authority from procuring works/supplies/services (as applicable) similar in nature to those requested by this Tender, but which fall outside the scope of this Tender in terms of quantity, quality and/or specifications, from any other source if and whenever is considered necessary. In these circumstances, the Contractor shall not claim any right whatsoever to be assigned such similar works/supplies/services.

7.4 The Contractor cannot, directly or indirectly, subcontract or handover any part of this contract without the prior approval of the Contracting Authority, after a written request to this effect by the Contractor.

7.5 The Contractor shall assume full responsibility and accountability, according to the current legislation, concerning the Health and Safety of his/her employees and/or his/her sub-contractors, including any third parties involved in the execution of this tender.

7.6 The Contractor shall be bound to conform with the Occupational Health and Safety Authority Act 2000 (Cap 424 of the Laws of Malta) and to all regulations/legal notice that form part of his/her Act; as well as any other national and European Union legislation, regulations, standards, and/or codes of practices in effect during the execution of the contract, regarding Health-and-Safety issues, as they apply for the Contractor's particular operating situation and nature of work activities.

7.7 The successful Contractor shall provide all health and safety related equipment as required by the Maltese legislation, good practice, as may be required by the Contracting Authority and as may be further detailed in this Contract.

7.8 The Contractor shall allocate all necessary resources to safeguard the health and safety of operatives, including those of subcontractors, and of any persons whom the Works may affect. The Contractor shall undertake to perform all necessary risk assessments, H&S procedures and maintain all relevant supporting records as required by Maltese legislation, good practice and as may be required by the Contracting Authority. This also includes the provision by the Contractor of all necessary personal protective equipment, mainly personnel on site are to wear safety boots, gloves, masks and all the necessary safety clothing to protect themselves, vaccinations and medical check-ups (if required) to all his/her employees, including those of subcontractors, employed on site or who are employed to execute the services requested in this Contract. The Contracting Authority reserves the right to carry out inspections in this respect and if the Contractor is found non-compliant then the Contracting Authority shall ask the Contractor to abide with H&S regulations with immediate effect. Subsequent notifications may imply that the Contractor is disqualified from the tender following which the Contracting Authority will seek the services requested from the next cheapest Tenderer.

7.9 The contractor shall be solely responsible for the safe operation of the plant and equipment employed on site in connection with the works, including the safety of the operators. All equipment shall conform to all safety regulations and legislation in force and / or recognised standards/codes of practice, while all the operators shall be in possession of all the necessary recognised permits, qualification and skill required to carry out such duties.

7.10 The Contracting Authority reserves the right to inspect all the equipment that shall be required by the Contractor to provide the services requested in this Tender Document.

7.11 A daily penalty of Two Hundred Fifty Euro (€250) shall be charged to the Contractor if:

(a) in the case of a service contract, the contractor fails to satisfactorily provide the requested services as stipulated in this Tender Document, and/or the service is found to be seriously lacking in quantity, quality or efficiency and/or the Contractor breaches any of the conditions stipulated in this Tender document;

(b) in the case of a supply contract, the contractor fails to deliver within the delivery period stipulated in the contract agreement, and/or the contractor's performance is found to be seriously lacking in quantity, quality or efficiency and/or the Contractor breaches any of the conditions stipulated in this Tender document;

(c) in the case of a works contract, the contractor fails to complete works and/or works in progress within the completion period, and/or in accordance with the timeframes of delivery, stipulated in the contract agreement, and/or the contractor's performance is found to be seriously lacking in quantity, quality or efficiency and/or the Contractor breaches any of the conditions stipulated in this Tender document;

In such case, the Contracting Authority shall issue Notification Warning letters or Default Notices, notifying the Contractor of his/her breach of contract and requesting immediate remedial action, as applicable, by the Contractor who shall remedy the failure within three working days from the notification, or else, as may be otherwise required by the Contracting Authority. Moreover, the Contracting Authority reserves the right to engage other contractors to execute the contract and any extra expenses incurred, further to the contract rates, shall be borne by the contractor. During the period the daily penalty is being applied, the Contracting Authority reserves the right to terminate the contract and award the contract to other bidders competing in the same tender. Moreover, in such event, the bank guarantee shall be forfeited.

7.12 Should the abovementioned Clause (7.11) be applied, the final sum due to the contractor shall be determined upon the expiry of the notice period indicated and any penalties or extra costs shall be deducted accordingly.

7.13 The Contractor shall follow and execute all legitimate directives and instructions issued by the Contracting Authority. The procurement detailed in this tender is authorised by the Contracting Authority as represented on site by the designated Officer in charge of the Contract, who shall verify that all the conditions stipulated in this tender are adhered to. All works to be carried out by the contractor shall always be under the direction and supervision of the Officer in charge of the Contract, who may be assisted by a technical officer or employee of the Contracting Authority.

7.14 The terms of Legal Notice 272/2012 shall be applicable with regards to payments by the Contracting Authority to the Contractor.

8.0 Tender Specifications and Conditions

8.1 Contract Objective

8.1.1 This Tender is for the Supply, Delivery, Installation and Commissioning of a Mobile Office and furniture produced with environmentally friendly materials and processes for the project on the Study and sustainable conservation of varieties of local plants.

8.2 Completion Period

8.2.1 The completion period is 12 weeks. The contract shall commence on the date of signature of the contract agreement.

8.3 Submission of Documents

8.3.1 Bidders are required to submit a detailed technical specifications, User Manual with full instructions and illustrations in English language, a certificate of local company representation (in case of foreign bidders) and a guarantee of equipment and parts All documents provided shall be written in English language.

8.4 Services Required

8.4.1 This contract covers the Supply, Delivery, Installation and Commissioning of a Mobile Office for the project on the Study and sustainable conservation of varieties of local plants at the Plant Health Directorate, Lija.

8.5 Specifications

8.5.1 Supply of Mobile Office

This tender is for the Supply, Delivery, Installation and Commissioning of a Mobile Office for the project on the Study and sustainable conservation of varieties of local plants at the Plant Health Directorate, Lija.

8.5.1.1 Description

The mobile office is to be between 5.5m to 6.5m long by 2.3m to 2.5m wide by 2.3m to 2.7m high. It is to be transportable on a trailer for 20 foot containers. They are to consist of a proprietary system based on a powder-coated steel frame with sandwich panels for the walls, floor and ceiling. Internally the mobile office is to be divided into two rooms, 2.5m to 3.5m by 2.3m to 2.5m each wide, one being accessible from the other, but with the possibility of locking the internal door. The office is to have one external door and two windows, one window in each of the rooms. The system is to allow for lifting by crane and fork lifter.

The mobile office is to be delivered to sites as indicated in the Schedule of rates / prices complete with all apertures, security grilles, light fittings, power points, telephone points and ac units, complete for connection with the service providers.

8.5.1.2 Quality of Materials

The metal frame: The chassis is to consist of a powder coated steel sub-frame with members along all the corners between the walls, floor and roof, and, if required, cross members. The sub-frame is to incorporate bottom lift facilities and lifting points. Provision is also to be made for the levelling of the mobile office on irregular terrain.

The walls: All external walls are to be of a durable one-piece sandwich panels with high performance low maintenance finish to offer protection against fire, extreme weather and accidental damage. The internal face is to be impact resistant and have a wipe-clean finish. Panels are to have painted galvanised steel sheeting externally and an internal PVC surface. U-value for the walls is to be approximately 0.4W/m2K to 0.5W/m2K.

The roof: The roof is to be of a durable one-piece construction with high performance low maintenance finish to offer protection against fire, extreme weather and accidental damage. Its internal face is to be impact resistant and have a wipe-clean finish. The roof is to be designed to take an un-factored uniformly distributed load of 0.75kN/m^2. Panels are to have painted galvanised steel sheeting externally and an internal PVC surface. U-value for the roof is to be 0.3.5W/m^2K to 4.5 W/m^2K. Roofing is to provide for gutters and drains for the collection and disposal of rain water.

The floor: The floor is to have a rigid galvanised steel frame with a waterproof sheeting covered with heavy duty seam welded vinyl flooring. The floor is to be designed to take an un-factored uniformly distributed load of 3 kN/m^2 U-value for the floor is to be 0.35W/m^2K to 0.45W/m^2K.

The doors: The external door is to be heavy duty aluminium side hung, outward opening glazed aperture, with panic bar and lock and with security bars. The internal door is to be heavy duty aluminium side hung outward opening with lock.

The windows: The windows are to be heavy duty aluminium sliding double glazed (external pane laminated) apertures, approximately 0.9m to 1.1m in width by 0.9m to 1.1m in height, with security bars and an insect screen.

Power and Lighting:

The mobile office shall be equipped with an electrical installation consisting of the following:

i. Consumer unit having main 2-pole 40A miniature circuit breaker (mcb), 30mA residual current device and mcb's for controlling lighting and power circuits. Separate mcb's and circuit shall be provided for the intenal lighting, the external lighting, power and each air conditioner.

ii. Cable management shall be in white PVC trunking 100x50mm approx, with power and ELV outlets fixed thereon.

iii. Lighting installation in each compartment shall include 2 in no. lighting points feeding twin 36W fluorescent units controlled by 1-gang switch and an 8W emergency luminaire (4 twin 36W fluorescent units and 2 8W emergency luminaires in all) and an external IP55 IK10 bulkhead fitting.

iv. *4 in no. twin switched BS1363 or EN equivalent socket outlets in each compartment (total 8 in no.).

v. External IEC309/BS4343 or EN equivalent IP54 socket outlet.

vi. Wiring facility for connection to electricity supply and earth electrode.

Telephone: Mobile office to have four in number telephone points located along cable trunking wire management system. Wiring is to be complete to permit connection with the service provider.

Fire performance: All materials used are to be non-combustible, minimising the potential fire load. Walls, ceiling and floor are to have Class O surfaces.

Transportation and handling: The mobile office is to be assembled in the Contractor's yard and is to be transported fully assembled by lorry and may be craned into position. All hook and other accessories required for the handling and transportation of the office is to be supplied with the units themselves. The Contractor is also to supply any footings and/or supports for the mobile offices, these supports being such that the internal floor level is not to exceed 75cm above the external site level. Appropriate steps/stairs are also to be provided if the difference in levels exceeds 30cm.

Together with the delivery of the items the successful tenderer will be required to furnish a certificate showing that the materials supplied conform to the above characteristics.

8.5.1.3 Guarantees

The tenderer shall give a 2-year guarantee on all individual items including consumables for both Mechanical and Electrical installations and also on the operation of the systems as a whole. This shall come into effect from the date of hand over of the systems to the Contracting Authority. Should any parts be replaced within that period of time, the guarantee period on those parts shall be renewed for another 3 years from the date of replacement. This holds true for both Mechanical and Electrical Services.

8.5.4 Air Conditioning Units

8.5.4.1 General

The air-conditioning units shall be of the reverse cycle heat pump type unless otherwise specified, suitable for year round use in elevated temperatures and shall be equipped with an inversion system allowing them to function as an air/air heat pump. The units shall be capable of withstanding an outdoor temperature of 43 deg. C. without tripping. This shall be substantiated by the manufacturer's literature which shall be supplied with the offer. The system shall consist of an indoor and outdoor unit, connected with lagged copper refrigerant pipes. The cooling capacity is based on indoor temperatures of 27deg.C D.B., 19.5deg.C WB and an outdoor temperature of 35 deg. C DB. All Units shall be inverter driven.

8.5.4.2 Scope of Works

8.5.4.2.1 It is expected that this plant be highly reliable and shall operate with maximum quietness as well as to maintain the required conditions automatically. The unit shall be located as directed by the client/Engineer.

8.5.4.2.2 Works detailed in the specification include:

a) The supply and installation of the air-conditioning units as detailed in the specifications.
b) The electrical connection between the equipment and the electrical supply point prepared by others.
c) Civil works such as the drilling of holes through thick walls and ceilings, chasing for the passage of pipes and the support of all equipment on the roof shall be the responsibility of the air-conditioning contractor and shall be included in the price quoted in the schedule.
d) Testing and commissioning.

8.5.4.2.3. The tenderer shall give a 3 year guarantee on all individual items of the installation and also on the operation of the systems as a whole. This shall come into effect from the date of hand over of the equipment to the client. Should any parts be replaced within that year, the guarantee period on those parts shall be renewed for another year from the date of replacement.

8.5.5. Energy Efficiency

The energy label as regards regulation 2002/3/EC for each air conditioning unit shall be included with the technical literature. Preference shall be given to those products which run more efficient on cooling and heating modes.
Units with a Class rating lower than B shall not be accepted.

8.5.6. 'Indoor' High Wall Mounted Type Units

8.5.6.1 Acoustic and thermal insulation shall be used throughout the unit. The fan shall be mounted on self-aligning bearings. Motor shall be silent running, rubber mounted and equipped with thermal overloads.

8.5.6.2 The unit shall have easy access to the following components without the necessity of removal or dismantling.

- wiring diagram and identification plate.
- terminal strips and electrical connections
- valves and refrigerant pipe connections
- blower motor assembly
- air filter
- air intake and discharge grilles
- condensate tray

8.5.6.3 Prices indicated in the Bill of Quantities shall include for the assembly of the air conditioning units, including all copper pipes, insulation and drains.

8.5.6.4 Air shall be taken in through the front of the unit and blown out of the lower front edge. The cooling capacity quoted in the Bill of Quantities shall be within the operating range for the particular unit.

8.5.6.5 The unit shall have a low profile and an attractive and aesthetically pleasing design. It shall be equipped with a variable fan speed possibility for low, medium and high speeds.

8.5.6.6 Discharge deflection grilles shall be provided on the air outlet to allow for directional control. These shall swing automatically to ensure an even distribution. Inlet grilles shall be fixed direction. These grilles shall be made of high temperature resistant thermoplastic and shall not warp with prolonged use.

8.5.7 Outdoor Unit

8.5.7.1 The main components of the outdoor unit shall be housed in a galvanised weather proof enclosure with a finish best suited to withstand all kinds of weather and environmental conditions. These shall have a slim and sleek profile and shall be mounted unobtrusively at high level or on the roof of the mobile office. Any required brackets shall also be galvanised and finished in appropriate paint.

8.5.7.2 The compressor shall be rendered soundproof by being mounted in a compartment or by other means. Units employing scroll type compressors shall be preferred. Inspection panels shall be easily removable facilitating access to all electrical and mechanical components and controls.

8.5.7.3 The cooling fan/s shall be covered by a protection grille which shall also be weather proof. Weather proof protection grilles shall also be provided for the air intake and discharge. The motor shall be silent running and fitted with rubber anti-vibration mountings.

8.5.8. Refrigerant Connections and Piping.

8.5.8.1 The connections between the indoor and outdoor units shall be twin lagged copper pipes. In case of bending, the pipes shall not be subjected to radii smaller than 3.5 times the pipe diameter. Pipe insulation shall be fire resistant. The installation is to be such that no pipe or insulation is visible. The fire resistant properties shall be clearly and comprehensively explained in the related technical literature supplied with the offer.

8.5.8.2 The price for each individual unit shall include all the required length of copper flow and return pipes.

8.5.9. Refrigerant Circuit.

UNITS shall be charged with R410a gas. The refrigerant circuit shall include the following:

a) Compressor which shall be of the hermetically sealed type with thermal and electrical protection linked to a hermetically sealed and brazed refrigerant circuit;

b) Pressure reducing device which shall be in adjustable and of the capillary type;

c) A built in filter for the refrigerant;

d) Inverting valve for cooling/ heating cycle mode selection.

8.5.10 Condensate Draining

The condensing unit shall be connected to an outlet with an adaptor such that it can be connected to drain.

8.5.11 Electrical Requirements

The units shall operate on a 240V 50Hz single phase or a 400V 50Hz three phase power supply. Power shall be provided by others adjacent to each outdoor unit. All electrical systems and wiring shall conform to the latest edition of the I.E.E. regulations and to current Enemalta regulations.

8.5.12 Remote Control

The units shall include a wireless remote control. It shall at least include the following:

- On/Off switch;
- Speed control;
- Cooling/ventilation only/heating selector;
- Thermostat for air conditioning temperature control;
- Timer.

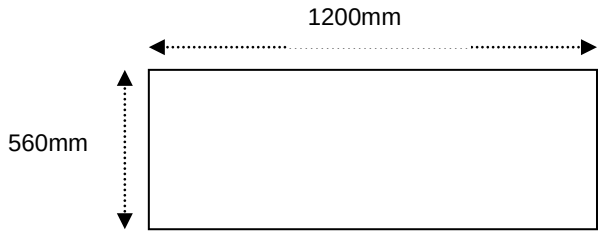
8.5.13 Furniture

All surface finishes shall be fit for daily office use, hardwearing and easy to clean. The contractor shall provide all ironmongery necessary for the proper execution of the work. These are to be included in rates submitted by the tenderer, providing also for costs involved in the supply and fitting of these fixtures. All ironmongery shall be heavy duty to suit daily office use. All drawers and cupboards are to have handles and

locks. All keys are to be labelled and handed over to the client on completion. All furniture supplied shall be new and must satisfy the minimum specifications listed hereunder. Inferior quality or damaged furniture shall be rejected outright and shall be replaced at the contractor's expense. Should any shrinking, warping or any unforeseen defects occur during the defects liability period, such work is to be made good at the contractor's expense. The contractor is to take all necessary measurements according to mobile office space as those provided with this document are only indicative.

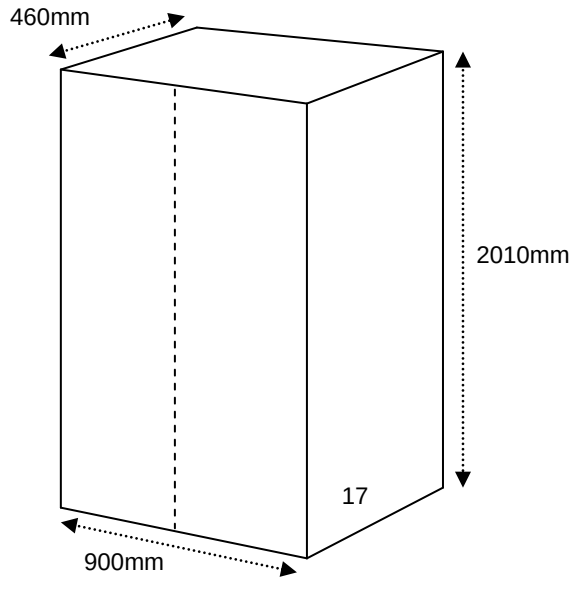
8.5.13.1 Desks

- Four (4) rectangular desks (two per room) in maple finish.
- All desks should have a height of about 720mm and should satisfy the dimensions shown on the following schematic plans (in millimetres).
- Inner, outer, top and bottom surface finish of all coated board panels is to be in maple finish and to be scratch resistant.
- Desks must include a flip top cable box and a horizontal cable tray. The cable tray would preferably from an integral part of the overall design/structure upon which plugs and network cable boxes may be mounted.



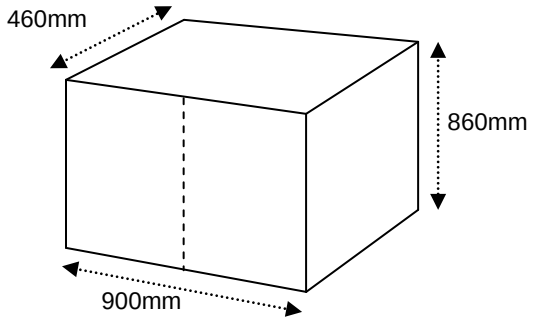
8.5.13.2 Bookcase

- Bookcase is to be in the form of lockable high cabinet, with two thick high doors.
- The doors, sides, tops and bases are to be 18mm thick, while the shelves are to be 25mm thick.
- Doors, top and back surface finish of all coated board panels including inner surfaces and shelves is to be in maple finish. All coated board panels are to be scratch resistant.
- Side panels of the bookcases are to match shelving and inner panels and have to be complete with holes arranged vertically at approximately 32mm spacing between centres to allow for their positioning of movable interior shelves.
- Bookcase to have four (4) shelves. Screw-on metal brackets are to be used for locking of shelf positions. One of the shelves shall be fixed to the side panels to provide structural stability. Metal hinges shall be joined to the side panels with three-position adjustable metal hinge plates with a clip-on fitting system.
- The back panel shall be flush with the side panels at the back of the unit, and connected to the base and top with check pins.
- The structure shall be assembled with metal stays and plugs and check pins.
- Bookcase feet are to be made of ABS plastic, either fixed or with castors that can be adjusted from inside the cabinet
- Overall dimensions are to satisfy dimensions specified in the following diagram (in millimetres):



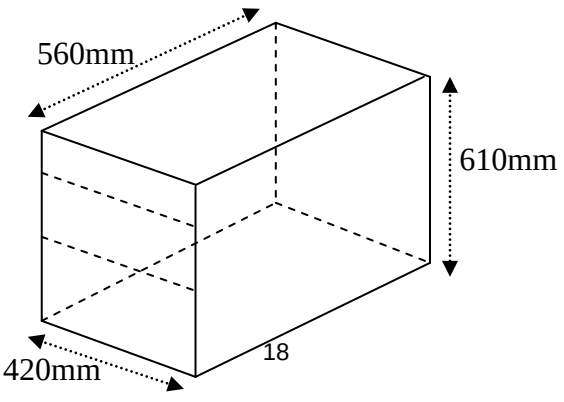
8.5.13.3 Low Cabinet

- Low cabinet shall have two (2) doors.
- The doors, sides, tops and bases are to be 18mm thick, while the shelves are to be 25mm thick.
- Doors, top and back surface finish of all coated board panels including inner surfaces and shelves is to be in maple finish. All coated board panels are to be scratch resistant.
- The edges of the top and the doors shall be in 10mm or 20mm thick ABS with a routered safety radius of 2 or 3mm
- Side panels of the low cabinet shall match shelving and inner surfaces, and completed with holes arranged vertically at approximately 32mm spacing between centres to allow for the positioning of adjustable internal shelves.
- Low cabinet is to have two (2) shelves. Screw-on metal brackets are to be used for locking of shelf positions. Metal hinges shall be joined to the side panels with three-position adjustable metal hinge plates with a clip-on fitting system.
- The back panel shall be flush with the side panels at the back of the unit, and connected to the base and top with check pins.
- The structure shall be assembled with metal stays and plugs and check pins.
- Cabinet feet are to be made from ABS plastic and can be adjusted from inside the cabinet.
- Overall dimensions for the low cabinet are to satisfy those specified in the following diagram (in millimetres):



8.5.13.4 Chests of drawers

- Four (4) chests of drawers are required one for each desk.
- These should fit under desk leaving enough leg space
- All coated board panels, including backs are to be 18mm thick
- Tops to have minimum thickness of 25mm**.**
- Inner and outer, top and bottom surface finish of all coated board panels is to be in maple finish and to be scratch resistant.
- All exposed edges shall be in 2mm thick ABS with routered safety radius of 2 or 3mm.
- The internal structure of drawers is to slide on metal runners with nylon runners.
- Each chest of drawers must accommodate three (3) drawers.
- The top drawer shall incorporate a cylinder lock with a foldaway safety key that is to lock all drawers simultaneously.
- Units shall be set on pivoting capped castors with double rigid PVC tread and steel rotation pin.
- Each unit shall be lockable through a cylinder lock with a foldaway safety key
- Overall dimensions are to satisfy those specified in the following diagram (in millimetres):



8.5.13.5 Chairs

Three (3) swivel chairs with arms as follows:

- Chairs to have a swivel five-star base on castors.
- Back height is to be adjustable with gas lift that conforms to DIN 4550 or equivalent.
- Back inclination is to be adjustable with a pivot tilting mechanism with multi-locking positions.
- All upholstery in Back and Seat is to be of durable fabric and shall be black in colour.
- The chair shall be certified to conform to fire resistance class 1 IM or equivalent.

One (1) executive armchair as follows:

- Executive chair must be swivel and have a five star moulded aluminium base with steel cone and soft twin wheel castors.
- Executive chair shall include head support either by the incorporation of a head-rest or higher back, both to be padded with injected polyurethane foam.
- Back height is to be adjustable with gas lift that conforms to DIN 4550 or equivalent.
- Back inclination is to be adjustable with advanced pivot tilting mechanism with multi-locking positions.
- Permanent contact between the high back and the seat must conform to UNI EN 1335/B or equivalent.
- Chair is to be equipped with two chromed armrests padded with black polypropylene.
- The seat is to incorporate steel bars or engineered wood for structural stability.
- All upholstery is to be of durable fabric and shall be black in colour.
- The chair shall be certified to conform to fire resistance class 1 IM or equivalent.

8.5.13.6 All the furniture procured in this tender shall comply with the following additional technical specifications; **Moreover bidders shall present detailed technical specifications of the furniture offered as proof of conformity with these specifications.**

- All wood and wood-based materials shall come from legally sourced timber.

Verification:

Certificates of chain of custody for the wood certified as FSC, PEFC or any other equivalent means of proof will be accepted as proof of compliance.

The legal origin of wood can also be demonstrated with a tracing system being in place. These voluntary systems may be 3rd party certified, often as part of ISO 9000 and/or ISO 14 000 or EMAS management system. If wood stems from a country that has signed a Voluntary Partnership Agreement (VPA) with the EU, the FLEGT licence may serve as proof of legality.

For the non-certified wood bidders shall indicate the types (species), quantities and origins of the wood used in production, together with a declaration of their legality. As such the wood shall be able to be traced throughout the whole production chain from the forest to the product.

In specific cases, where the evidence provided is not considered sufficient to prove compliance with the requested technical specifications, contracting authorities may ask suppliers for further clarifications of proof.

- All plastic parts ≥ 50g shall be marked for recycling according to ISO 114 69 or equivalent and must not contain additions of other materials that may hinder their recycling.

Verification:
Bidders must provide a description of the plastic materials that are present and the quantities used, the way in which they are labelled and how they are attached to one another or to other materials.
Products carrying a type I ecolabel fulfilling the selected criteria will be deemed to comply.

The products used for surface coating shall:

- Not contain hazardous substances that are classified according to Directive 1999/45/EC as
- carcinogenic (R40, R45, R49), harmful to the reproductive system (R60, R61, R62, R63), mutagenic
- (R46, R68), toxic (R23, R24, R25, R26, R27, R28, R51),

- allergenic when inhaled (R42) or harmful to the environment (R50, R50/53, R51/53, R52, R52/53,
- R53). cause heritable genetic damage (R46), danger of serious damage to health by prolonged
- exposure (R48), possible risks of irreversible effects (R68).
- Not contain more than 5% by weight of volatile organic compounds (VOCs).
- For phthalates: no use is allowed of phthalates that at the time of application fulfil the classification criteria of any of the following risk phrases (or combinations thereof):
- R60, R61, R62, in accordance with Directive 67/548/EEC and its amendments.
- Not contain aziridine
- Not contain Chromium (VI) compounds

Verification:
Bidders must present a list with all surface treatment substances used for each material present in the furniture and their Security Data Sheet or equivalent documentation demonstrating compliance with the above criteria. Furniture carrying a type I ecolabel will be deemed to comply.

- Packaging materials

Packaging must consist of readily recycled material, and/or materials taken from renewable resources, or be a multi-use system.
All packaging materials shall be easily separable by hand into recyclable parts consisting of one material (e.g. cardboard, paper, plastic, textile).

Verification:
A description of the product packaging shall be provided together with a corresponding declaration of compliance with these criteria.

- The VOC content of adhesives used in the assembly of furniture shall not exceed 10% by weight.

Verification:
Bidders must present a list with all adhesives used in the assembly of furniture and their Security Data Sheet or equivalent documentation where the amount of VOCs is displayed demonstrating compliance with the above criteria. Furniture carrying a type I ecolabel fulfilling will be deemed to comply.

- Furniture must meet the appropriate quality standard regarding serviceability (durability and ergonomics). Desk dimensions shall be to MSA EN 527-1:2011.

Verification:
Bidders must provide appropriate documentation to demonstrate compliance with these standards

8.5.14 Computer Network

The tender price shall include the installation of a computer network as specified hereunder. The equipment and quantities can be found in the schedule of prices.

The tenderers must comply with the work practises and standards specified in the Government of Malta Policy on Computer Network Configuration document found in this tender document as Annex B.

8.5.14.1 LAN Specifications are as follows

WALL AND FLOOR MOUNTED 19" RACKS	**Common features for all racks:**	• Complete protection against rust • Ingress of dust prevented in a quantity that impairs the operation of electronic equipment. • Robust design • Comply with - IEC 297-1 (Conformity with 19" equipment). • Tempered glass – UNI 7142-(88) • The racks will conform to IP 54.
	Standard Features	• Basic Rack • Removable and lockable side and rear panels • Front door, single security glass panel, with handle and mounted key cylinder lock • At least one set of Spare keys to be provided • Top cover with vented lid • 19" rack mounting kit front and rear • Earth bar incl. Set of earth leads for the earthing of side and rear panels • Set of 4 levelling feet. For floor standing racks • IP ratings to be provided. • 19" Switched horizontal power distribution bar (PDU) with 4 in quantity or more standard British 13 Amp type sockets & 2.5 m power cable fitted with a 13Amp plug. Mains indicator is also required • Set of nuts and bolts • Plinths for cable entry side and rear • Must allow for proper cooling airflow • 1.13 19" Standard shelf incl. mounting accessories. To be provided only if requested by Mita
	Accessories / Options	Some of the accessories are to be included with the rack supplied. These are not mandatory requirements but only if additionally requested by MITA. Vide requirements for each item
		• 2.1 19" Front mounting shelf 300mm depth • 2.2 19" Front mounting shelf 400mm depth • 2.3 19" Shelf with fully extendible telescopic slides • 2.4 19" Horizontal cable management panel with 3-5 jumper rings (steel) 1U • 2.5 19" Horizontal cable management panel with 3-5 jumper rings (steel) 2U • 2.6 Vertical cable management • 2.7 One set of roof mountable fans • 2.8 Set of 4 in quantity lockable Castors for floor standing racks. • 2.9 Vented rear or side panels
Racks are to be supplied fully assembled except for power bars, earth bars and shelves. All required nuts and bolts are to be supplied. The quantity of nuts & bolts can be given in the RFQ by Contracting Authority or calculated by the supplier onsite.		
Bidders are to offer storage facilities for supplies that may be ordered by Contracting Authority. All storage facilities are to be fully insured against all risks.		
The price should also include delivery to any site in Malta and Gozo as requested by Contracting Authority.		
	Wall Mounted Networking Cabinets for electronic equipment.	• Height 9-15U • Width 600 mm • Depth 600 mm • Mounting on walls, mounting accessories to be included • Others Cable entry at top and bottom • With front opening glass door (key lockable), fixed chassis and front 19" swing frame.
UTP Data Cabling		
UTP cabling products should be capable of supporting 1000BASE-T IEEE 802.3ab end to end.		
All the components making up the structured cabling listed below should ideally be part of one brand.		

The products offered should at least meet or exceed the following standards:		
	Category 6 UTP	
	Compliance	• EIA/TIA-568-B.2 Cat 6 • ISO/IEC 11801:2002 - 2nd Edition Class E • EN 50173(2000) Class E • PrEN 50288-6-1 • Fire rating • PVC: IEC 60332-1 • FRNC: IEC 60332-1; IEC 60754-2; IEC 61034; • Fire Propagation Test: UL 1581 VW1 and IEC 332.1
	Cable Structure	• 4 pair UTP cables each pair twisted separately.
	Insulation	• Low Smoke Halogen Free type with minimum wall thickness of 0.25 mm
	Imprint	• Accordance to IEC189 and IEC708
	Wire Type	• Nominal 24 AWG, 0.51 soft plain copper conductor
	Patch Panels	
	UTP Punch Down Patch Panels RJ-45 - CAT 6	
	Type	• UTP
	Transmission Category	• ISO11801 /EIA/TIA
	Standard	• Must meet the cabling standards as specified under the relevant data cabling section.
	Connection Type	• Krone IDC punch down type. Accepts 22 to 26 AWG wires
	Space	• Occupies a space of 1U
	Colour Code	• Has the TIA 568B pin configuration
	Others	• Identification tags or numbering for ease of identification of sockets – preferably on top of the sockets
	Standard	• Must meet the cabling standards as specified under the relevant data cabling section.
	Connection Type	• Krone IDC punch down type or toolless • Termination type. Accepts 22 to 26 AWG wires
	Space	• Occupies a space of 1U
	Colour Code	• Has the TIA 568B pin configuration
	Others	• Identification tags or numbering for ease of identification of sockets – preferably on top of the sockets
	Shielding	• Shielding facilities for FTP preferably shielding back pane
	Others	• Enhanced cable management • Identification tags or numbering for ease of identification of sockets – preferably on top of the sockets
	Wall-port Outlets	
	UTP Wall-port Outlets RJ-45 - CAT 6	• ISO 11801 /EIA/TIA • Spring loaded shutter • Max. Cross Talk at 4MHz with 258A Wiring should be better than -50dB • Should be suitable for use with BS4662 (3x3) mounting boxes. • Wire Unkeyed / Keyed • Low profile • Krone IDC punch down type. Accepts 22 to 26 AWG wires • Has the T 568B pin configuration • Complete with mounting screws • Labelling: Should provide ample space for proper identification labelling for each socket, preferably having a plastic sheet cover to protect the tagging of the outlet
Both UTP and FTP wall ports should be available as modular sockets providing flexibility for single, dual, triple or quad configurations, including quad and half blanks if required.		
UTP Patch Cords - RJ-45 - CAT 6		
	Category	• ISO 11801, ANSI/EIA/TIA-568-b • Must meet the cabling standards as specified under the relevant data cabling section

	No of pairs	• 4-Twisted Pair
	Termination	• RJ45 male connectors at both ends
	Shielding	• Connector must have the shielding part in the FTP versions.
Trunking & Accessories		
Trunking	**Type**	• PVC non-flammable
	Standards	• BS4678 Heavy duty classification
	Size	• As specified in each RFQ (request for quote)
Accessories for the above trunking		• Outside/External Angle (Clip on type) • Inside/Internal Angle (Clip on type) • Joint Cover/External coupler (Clip on type) • Cable Retainers • Flat Angle (Clip on type). • Flat Tees (Clip on type). • End Caps (Clip on type). • Socket Plate 1 Gang (3*3). • Socket Plate 2 Gang (6*3) • PVC 3*3 Surface Box 45mm Deep. • PVC 6*3 Surface Box 45mm Deep
Labelling		• Use letter for cabinet identification (e.g. rack A, rack B etc.) • Wall port numbers should start with relevant rack letter and use number starting from 001 (e.g. cables from rack A - A001 / A002). • This labelling is to be done clearly at both ends (i.e. patch panel side and network points side) • Links such as UTP cable / patch leads used for backbone connectivity or server connectivity are to be clearly labelled and documented • Fibre Optic cable should be marked throughout the length of its laying • Fibre trays are to be clearly labelled indicating how the connections are spliced. The relative patch cords are also to be labelled accordingly.
Patch Cords RJ45 – RJ45 – colour coding		
	Data:	• Grey
	Voice: -	• Green
	Use of cable management	• Appropriate use of cable management is expected to minimise cable tangling at the cabinet side
	Terminations of UTP cabling	• Cables terminated at the cabinet's side are to be left with adequate slack depending on the cabinet size
	Splicing of fibre optic cable	• Fibre cable should be left with ample slack before splicing
Warranty	**Warranty of 10 years on copper cabling .**	
Installation	**Cable installers should be trained and certified especially when working on CAT 6 and fibre optic cabling**	
Testing	**Testing of all network points to be provided in soft copy to MITA**	
		• ISO/IEC11801 • Class D CAT5 E or Class E Cat 6 • UTP 100ohm
These tests shall ensure that connectivity between the central equipment cabinet and every individual network-point complies with the Category 5E or 6 standard (568B Annex E and ISO Class C/D requirements)		
More specifically, the following International Standards shall be used:		• Amended ISO 11801(2002 2nd edition) • TIA/ EIA 568B • CAT5e Class D or Class E CAT 6
The following individual tests shall be performed on each CAT 5E network connection:		
	Length Test	• This test shall ensure that the length of the Unshielded Twisted

		Pair (UTP) cable-run is within the required limits. This test shall also ensure that no abnormal termination/s (open-circuit, short-circuits or breaks) exist.
	Near End Cross-talk (NEXT)	• This test shall analyse cable-pairs for any induced interference from proximity pairs. This interference is due to eddy-currents generated by high speeds.
	Attenuation	• This test shall analyse signal-strength following passage through a complete circuit.
	Attenuation to Cross-talk Ratio (ACR)	• This test shall compare the ratio between the decrease in strength, to the interference caused by signals in accompanying pairs. This test is a measure of the remaining signal strength following network operation at heavy traffic-loads.
	Wire Map	• This test shall ensure that the network-connection is correctly wired-up.
	Impedance	This test shall ensure that the impedance of the cable is constant across the normal operating bandwidth.
	Capacitance	This test shall ensure that capacitance between any two pairs is within limits. This in order to avoid potential signal distortion.
The following individual tests shall be performed on each CAT 6 network connection:		
	Length Test	This test shall ensure that the length of the Unshielded Twisted Pair (UTP) cable-run is within the required limits. This test shall also ensure that no abnormal termination/s (open-circuit, short-circuits or breaks) exist.
	Near End Cross-talk (NEXT)	This test shall analyse cable-pairs for any induced interference from proximity pairs. This interference is due to eddy-currents generated by high speeds.
	PSNEXT (Power Sum Near-End Crosstalk)	PSNEXT is the combined crosstalk noise caused by near end transmitters on Neighbouring cable pairs interfering with the signal measured at the same end on a given pair. Higher values for this parameter imply that lower crosstalk energy is transferred into the adjacent pair. Expressed in decibels (dB), higher values are better.
	PSACR (Power Sum Attenuation-to-Crosstalk Ratio)	PSACR is the difference between the attenuation of the signal and the power sum crosstalk measured in decibels (dB) at a specified frequency. This difference is critical to ensure that the signal sent down the twisted-pair cable is stronger at the receiving end of the cable than any interference signals (crosstalk) from other pairs. Measured in decibels (dB) at a specific frequency, higher values are better.
	PSELFEXT (Power Sum Equal Level Far-End Crosstalk)	PSELFEXT is the crosstalk noise caused by far end transmitters on neighboring cabling pairs interfering with the signal measured at the near end of the same channel. PSELFEXT is expressed in dB relative to the magnitude of the receive signal. Higher values imply that lower crosstalk energy is transferred into the adjacent pair. Expressed in decibels (dB), higher values are better.
	ELFEXT (Equal Level Far End Crosstalk)	(Equal Level FEXT) is a calculation that normalizes the results of a FEXT (Far End Cross Talk) measurement, because it takes attenuation into account.
	Attenuation	This test shall analyse signal-strength following passage through a complete circuit.
	Attenuation to Cross-talk Ratio (ACR)	This test shall compare the ratio between the decrease in strength, to the interference caused by signals in accompanying pairs. This test is a measure of the remaining signal strength following network operation at heavy traffic-loads.
	Wire Map	This test shall ensure that the network-connection is correctly wired-up.
	Impedance	This test shall ensure that the impedance of the cable is constant across the normal operating bandwidth.
	Capacitance	This test shall ensure that capacitance between any two pairs is within limits. This in order to avoid potential signal distortion.

	Length Test	This test shall ensure that the length of the Unshielded Twisted Pair (UTP) cable-run is within the required limits. This test shall also ensure that no abnormal termination/s (open-circuit, short-circuits or breaks) exist.
	Near End Cross-talk (NEXT)	This test shall analyse cable-pairs for any induced interference from proximity pairs. This interference is due to eddy-currents generated by high speeds.

8.5.14.2 Layer 2 Switch Specifications

The tenderers are to fill in the "Level 2 Switch Specifications" Document found in this tender document. Failure to comply shall result in the offer not being considered any further.

8.5.15 Maintenance

The tender price shall include regular periodic maintenance (quarterly visits, a total of four (4) visits not including commissioning and handing over) for the duration of 18 months. If the contractor shall not carry out the maintenance as per schedule supplied with the offer, payment shall not be effected.

8.5.16 Cleaning

The contractor is to clean the mobile offices immediately prior to final inspection clean areas in accordance with instructions by Officer in charge. The contractor is to remove any resulting material/debris from the site after delivery.

8.5.17 Setting out

The exact location is to be indicated by the client. The contractor shall place the mobile office on level ground provided by the client and shall make good any defects on the existing base prior to the execution of the works.

The contractor shall furnish all labour, materials, tools and equipment required to complete the works.

8.5.18 Defects

All items hall be approved by the architect and/or engineer and any items which in his/ her opinion are defective shall be replaced at the contractor's expense.

8.5.19 Technical Literature - Submittals with this Tender

(a) Tenderers must submit the following information, which is to clearly indicate (by clear marking), the products being offered for this tender;

(b) Detailed technical descriptive literature of the items here indicated and which tenderer intends/ proposes to supply and deliver if awarded the contract are to be delivered at the Contracts and Procurement Section of the Works Division, Floriana before the due date and time fixed for the submission of the tenders.

(i) Technical literature regarding the proprietary system for the mobile offices including information on the floor, wall and ceiling panels, as well as their loading capacity and U-values;
(ii) Handling and transportation specifications;
(iii) Technical literature regarding the floor finish;
(iv) Technical literature regarding the light fittings;
(v) Technical literature for the door and windows:
(vi) Technical literature for all light fittings.

In each case, tenderer is to clearly indicate that the item to be supplied is as per tender requirements and as per Specifications.

(c) Each Tenderer shall also submit together with his tender:

(i) Description of the equipment and its components as offered together with all relevant manufacturers' catalogues illustrations and diagrams. All relevant technical and descriptive literature shall be in English. This shall be sufficient to prove that the equipment conforms to the tender specification. Literature shall be provided for the following:

- Section 8.5.5 Energy Efficiency Details for the units offered.
- Section 8.5.6 High Wall Mounted Indoor Units.
- Section 8.5.7 Outdoor Units.
- Section 8.5.8 Insulation for refrigerant pipes
- Section 8.5.12 Remote Control Units.

(ii) A guarantee on all equipment they intend to offer for a minimum period of 36 months against faulty workmanship and materials and on the operation of the system as a whole. If during this period any parts or equipment have to be changed, the guarantee on that part is to be renewed for another year from date of replacement. The prospective tenderer shall also guarantee the supply of spares up to the next ten years following the award of the contract.

(iii) Only recognised brand names of manufacturers with a proven track record in similar applications shall be acceptable to the Client. Tenderers must therefore submit a reference list showing client names and respective locations where similar units have been installed. The list must contain names, addresses and contact details of at least 10 (ten) different clients whose offices/concerns have been air-conditioned by similar systems. Offices with a single split unit and private residences shall not form part of the list and will not be accepted.

(d) Technical Literature is to bear a label marked clearly with the name and address of the tenderer.

(e) A receipt will be given for both sample/s and technical literature submitted.

8.5.20 Fire Safety Specifications

8.5.20.1 Design Concept

This site office shall be a single-storey mobile type which may be placed at ground level or at a higher level, say, on top of a roof. Owing to the fact that it may be placed next to a boundary wall or on a higher than ground floor level the fire rating of the construction shall be at least 60minutes. Portal frames on the external wall, need to be fire resistance of at least 60 minutes, owing to the fact that these may be near a relevant boundary, in order to restrict the spread of fire between buildings.

The structure of a roof does not require fire resistance, unless the roof forms part of a portal frame structure where the roof and the supporting stanchions form a single structural element.

8.5.20.2 Exterior Walls

- Exterior walls are non-load bearing structures and need only support the roof, with an overall fire resistance of up to 60 minutes, EI-60.
- Where insulating core panels are to be used, a risk assessment should be carried out to identify the potential fire risk.
- Any cavity created by the arrangement of panels, their supporting structure or other building elements should be provided with suitable cavity barriers.
- The core of the panels shall be polyisocyanurate core or of a material having less fire spread characteristics.
- The building superstructure, together with any elements providing support to the insulating envelope, should be protected to prevent early collapse of the structure or the envelope.

8.5.20.3 Internal wall and Ceiling Linings

- Owing to the fact that the floor area is relatively small, internal wall and ceiling linings can be in conformity to table 35, BS 9999, that is class D-s3, d2, that is, no limit set for production and /or flaming droplet/particles, (National: class 3).

8.5.20.4 Glazed Fire Resisting Elements

- Glazed elements, when incorporated into fire-resisting external and internal walls, partitions and screens, should provide a level of fire resistance equivalent to that of the structure into which they are installed. The level of fire resistance of a representative example of the glazed element should be demonstrated to have been tested in accordance with BS 476-22 or classification in accordance with EN 13501-2.

- Where applicable, glass in fire-resisting glazed elements should conform to BS 6262-4 for impact safety, BS 6180 if used in a barrier, and BS 5234 if used in a partition.

- All fire-resisting glass should be marked, as a minimum, with an identifiable name or trademark, or other mark, capable of unambiguous identification to the manufacturer or supplier. Appropriate documentation to confirm the system level of fire resistance should be provided on completion of the installation.

- To minimize the risk of ignition from the surrounding areas, non-insulating glazed areas in fire-resisting structures should be at least 1.1 mm above floor level.

- The maximum glazing for a fire door shall be 25% of the door area.

8.5.20.5 Fire rated doors and windows

- Fire rated aluminium profile door and windows or otherwise.
- Fire doors shall be self-closing unless kept locked most of the time.
- All fire doors should be marked, as a minimum, with an identifiable name or trademark, or other mark, capable of unambiguous identification to the manufacturer or supplier. Appropriate documentation to confirm the system level of fire resistance should be provided on completion of the installation.
- Specification of all materials and hardware of fire doors as well as the installation shall be certified to be according to BS 8214.
- Building hardware used on fire-resisting doors and windows shall be shown to be satisfactory when tested in accordance with BS 476-22 or EN 1634-1.
- Controlled door devices shall be in conformity to EN 1154.
- All items of hardware for use on fire doors should be suitable for the type of door to which they will be fitted.
- No holes or breaks in the door or frame are permitted.

9.5 **8.5.20.6** Partitions

- Fire compartment walls should run the full height of the storey in which they are situated.
- The panel installer shall examine all structural steel before beginning installation to ensure that all supporting members are straight, level, plumb, properly braced and satisfactory for panel installation.
- Installation shall be in accordance with manufacturer's instructions and recommendations.
- Sealants, where required, shall be applied to clean dry surfaces only without skips or voids, to ensure integrity of the fire barrier and meet the requirements of the fire resistant certification.
- Intumescent sealer shall be used wherever the panelling adjoins the stone or concrete or dissimilar material and where there is a possibility of flexing to ensure fire barrier integrity at all times.
- Damaged panels and other components of work, which cannot be repaired by finish touch-up or similar minor repair, shall be replaced.
- Penetrations of fire-resistant or sound-insulating constructions for services need careful consideration to ensure that the performance of the element is not downgraded and also that the services themselves do not act as the mechanism of fire spread or sound transmission.
- Floor and ceiling channels must be securely fixed with a row of fixings at 600mm maximum centres, with the appropriate section of channels. Two rows of staggered fixings are required, each row at 600mm centres and each fixing 25mm in from the flange. If the concrete or screeded floor is new, consideration should be given to the installation of a damp proof membrane between the floor surface and the channel or sole plate.

8.5.20.7 Glazing

For installation requirements for glazing refer to installation procedures for fire rated windows and doors

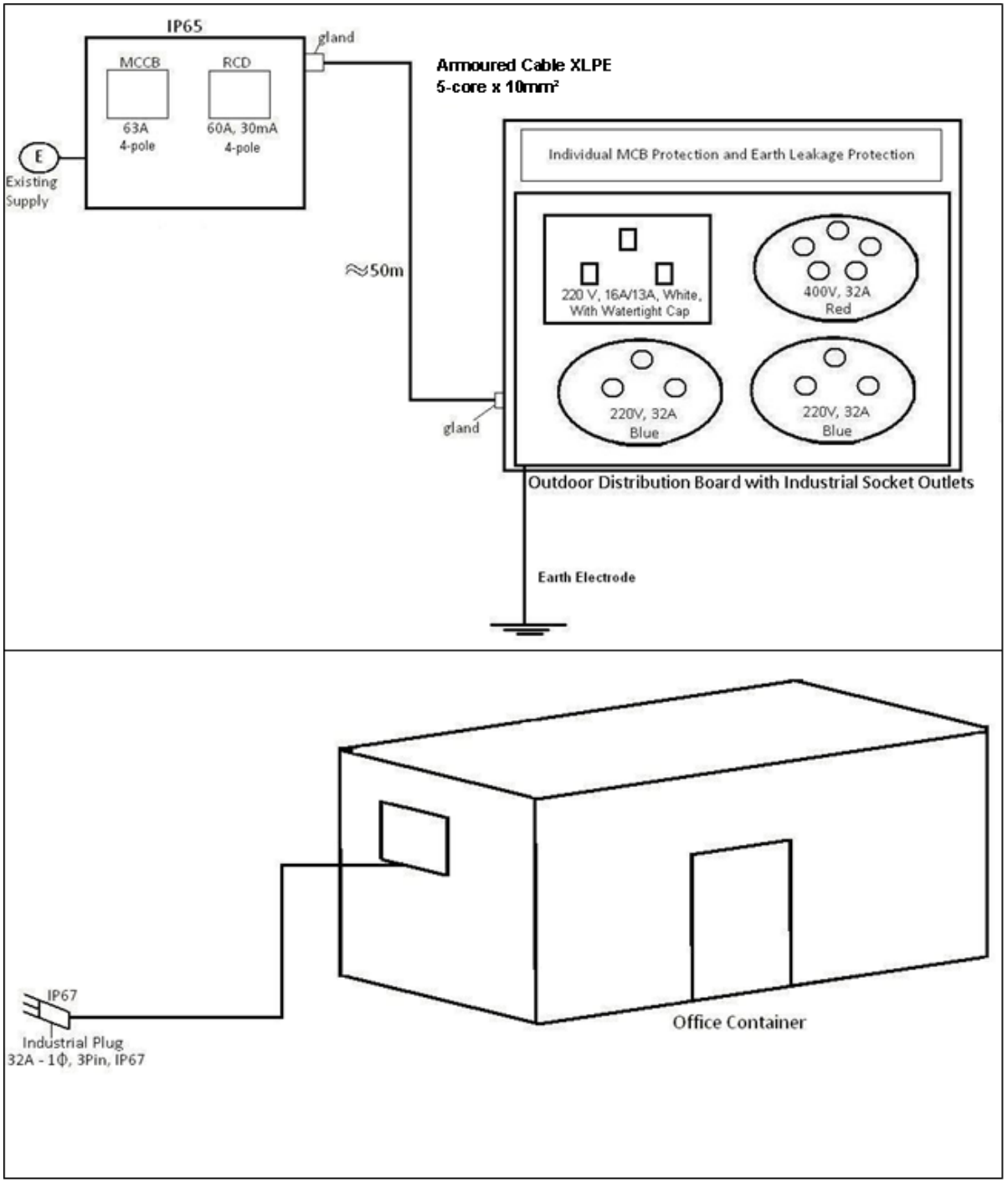
8.6 **8.5.20.8** Fire rated doors and windows

- The contractor shall provide evidence that the installer/s is competent to do such an installation.
- It is particularly important to ensure that doors installed on site conform, in dimensions and workmanship, to the manufacturer's specification for the appropriate fire resistance test report/assessment. Doors should be hung to ensure a good fit to the frame when closed and the junction between door assembly and surrounding structure should be adequately sealed.
- Door closers shall be set in such a way as to override any latches fitted to the door, or in the absence of a suitable latch or other positive device for holding the door shut in its frame, be of a type that when tested in accordance with BS 476-8 or BS 476-22 or EN 1634-1 is shown to be able to hold the door closed in the frame for a sufficient period of time for the closing role to be taken over by a thermally activated sealing device (e.g. an intumescent seal), or throughout the full period of exposure if such seals are not incorporated.
- A fire door that is needed to resist the passage of smoke at ambient temperature conditions, i.e. fire doors having suffix S, should either:
  a) have a leakage rate not exceeding 3 m^3/h per metre, when tested in accordance with BS 476-31.1 with the threshold taped and subjected to a pressure of 25 Pa;
  b) or meet the classification requirement of Sa when tested in accordance with BS EN 1634-3.

- When installed, the threshold gap should, where practicable, be sealed by a (flexible edge) seal either with a leakage rate not exceeding 3 m^3/h per metre at 25 Pa or just contacting the floor, giving an even contact with the floor but not exhibiting significant increased frictional forces that could interfere with the closing action of the door. Where this is impracticable, the threshold gap should not exceed 3 mm at any point.

- All fire doors other than lift entrance doors should be marked with the appropriate fire safety sign conforming to BS 5499-1.
- For double doors, the coordinator shall ensure that the door leaves close in proper sequence.
- Any modifications performed on site shall be in accordance with the manufacture's and third party certification.
- Any required gaskets and edge seals, where required, are present and continuous and appropriate for the type of fire door.
- The gap between the jab of the opening and the frame shall usually be less than 15mm, so that this can be filled with intumescent sealer or foam, for the whole thickness and perimeter of the frame. If the gap is in access of 15mm the gap shall be filled with fire rated boards or rockwool and sealed with intumescent sealer throughout.

Appendix A



Mobile Office Utility Distribution Supply

TENDER FORM

(A separate, distinct Tender Form must be submitted for EACH OPTION - if applicable - submitted)

Place and Date: **Malta – 16th September 2014**

Publication reference: **MSDEC/Agric/258/2013**

Name & Address of Contracting Authority: **Plant Health Directorate**
Plant Biotechnology Centre,
110, Annibale Preca Street,
Lija LJA 1915

Supply, Delivery, Installation and Commissioning of a Mobile Office and furniture produced with environmentally friendly materials and processes for the project on the Study and sustainable conservation of varieties of local plants

MSDEC/Advert № 10/2014

A. TENDER SUBMITTED BY:

	Name(s) of tenderer(s)	Nationality
Leader		
Partner 2*		
Etc … *		

* add/delete additional lines for partners as appropriate. Note that a sub-Contractor is not considered to be a partner for the purposes of this tender procedure. If this tender is being submitted by an individual tenderer, the name of the tenderer should be entered as 'leader' (and all other lines should be deleted)

B. CONTACT PERSON (for this tender)

Name	
Address	
Telephone	(____) _____
Mobile	(____) _____
Fax	
E-mail	

C. TENDERER'S DECLARATION(S)

To be completed and signed by the tenderer (including each partner in a consortium).

In response to your letter of invitation to tender for the above contract, we, the undersigned, hereby declare that:

1 We have examined, and accept in full and in its entirety, the content of this tender document (including subsequent Clarifications Notes issued by the Contracting Authority) for invitation to **MSDEC/Advert №. 72/2014 of 22nd August 2014.** We hereby accept the contents thereto in their entirety, without reservation or restriction. We also understand that any disagreement, contradiction, alteration or deviation shall lead to our tender offer not being considered any further.

2 We offer to provide, in accordance with the terms of the tender document and the conditions and time limits laid down, without reserve or restriction, the services indicated on the Schedule of Prices and Rates.

3 The price of our tender (inclusive of VAT, duties, other taxes and any discounts) is:

€ _____

4 This tender is valid for a period of 3 months from the final date for submission of tenders.

5 We are making this application in our own right and [**as partner in the consortium** led by < name of the leader / ourselves >] for this tender. We confirm that we are not tendering for the same contract in any other form. [We confirm, as a partner in the consortium, that all partners are jointly and severally liable by law for the performance of the contract, that the lead partner is authorised to bind, and receive instructions for and on behalf of, each member, and that all partners in the joint venture/consortium are bound to remain in the joint venture/consortium for the entire period of the contract's performance]. We are fully aware that, in the case of a consortium, the composition of the consortium cannot be modified in the course of the tender procedure.

6 We are not bankrupt or under an administration appointed by the Court, or under proceedings leading to a declaration of bankruptcy. We also declare that we have not been convicted criminally, or found guilty of professional misconduct. Furthermore, we are up-to-date in the payment of social security contributions and other taxes.

7 We accept that we shall be excluded from participation in the award of this tender if compliance certificates in respect of declarations made under Clause 6 of this declaration are not submitted by the indicated dates.

8 We have no potential conflict of interests or any relation with other candidates or other parties in the tender procedure at the time of the submission of this application. We have no interest of any nature whatsoever in any other tender in this procedure. We recognise that our tender may be excluded if we propose key experts who have been involved in preparing this project or engage such personnel as advisers in the preparation of our tender.

9 We will inform the Contracting Authority immediately if there is any change in the above circumstances at any stage during the implementation of the contract. We also fully recognise and accept that any false, inaccurate or incomplete information deliberately provided in this application may result in our exclusion from this and other contracts funded by the Government of Malta and the European Communities.

10 I acknowledge that the Contracting Authority shall request rectifications in respect of incomplete/non-submitted information pertinent to the documentation listed in clause 2.1.3. We understand that such rectification/s must be submitted within two (2) working days, and will be subject to a non-refundable administrative penalty of €50, and that failure to comply shall result in our offer not being considered any further.

11 We note that the Contracting Authority is not bound to proceed with this invitation to tender and that it reserves the right to cancel or award only part of the contract. It will incur no liability towards us should it do so.

Name and Surname: _____

I.D. / Passport Number: _____

Signature of tenderer: _____

Duly authorised to sign this tender on behalf of: _____

Company/Lead Partner VAT No: _____
(if applicable)

Stamp of the firm/Company: _____

Place and date: _____

TENDERER'S DETAILS

Name of Tenderer/Joint Venture/Consortium	…… ……
Address	…… ……
Manufacturer	……
Country of Origin	……
Trading Licence No.	……
VAT Registration Number ***(if applicable)***	……
Name of Contact Person	……
I.D. / Passport Number	……
Signature	……
Date	……

DATA ON JOINT VENTURE/CONSORTIUM (if applicable)

Name	.....
Managing Board's Contact Details	Address: .... Telephone: ..... Fax: ..... Email: .....
Agency in the state of the Contracting Authority, if any ***(in the case of a Joint Venture/Consortium with a foreign lead partner)***	Address: .... Telephone: ..... Fax: ..... Email: .....
Names of Partners	(i) ..... (ii) ..... (iii) ..... (iv) .....
Name of Lead Partner	.....
Agreement governing the formation of the Joint Venture/Consortium *(Enclose Joint Venture/ Consortium Agreement)*	
Place of Signature	**Date of Signature**: .....
Proposed proportion of responsibilities between partners (in %) with indication of the type of the works to be performed by each* * The Company acting as the lead partner in a joint venture/consortium, they must have the ability to carry out at least 50% of the contract works by its own means. If a Company is another partner in a joint venture/consortium (i.e. not the lead partner) it must have the ability to carry out at least 10% of the contract works by its own means	
..... - .....% ..... - .....%	..... - .....% ..... - .....%

Signature: _____

(*the person or persons authorised to sign on behalf of the tenderer*)

Date: .....

SUB-CONTRACTING (if applicable)

If the tenderer plans to sub-contract part of the works, he/she must provide the following details:

Service/s intended to be sub-contracted	Name and details of sub-contractors	Value of sub-contracting as percentage of the total cost	Experience in similar services (details to be specified)

Signature: .....

(*the person or persons authorised to sign on behalf of the tenderer*)

Date: .....

Statement on Conditions of Employment

Tenderers are to ensure that self-employed personnel are not engaged on this contract. Non-compliance will invalidate the contract.

It is hereby declared that all employees engaged on this contract shall enjoy working conditions such as wages, salaries, vacation and sick leave, maternity and parental leave as provided for in the relative Employment Legislation. Furthermore, we shall comply with Chapter 424 of the Laws of Malta (Occupational Health and Safety Authority Act) as well as any other national legislation, regulations, standards and/or codes of practice or any amendment thereto in effect during the execution of the contract.

In the event that it is proved otherwise during the execution of the contract it is hereby being consented that the contract is terminated with immediate effect and that no claim for damages or compensation be raised by us.

Signature: .....

(*the person or persons authorised to sign on behalf of the tenderer*)

Date: .....

SCHEDULE OF PRICES AND RATES

(To be completed by the Tenderer or an Authorised Representative)

ITEM No	DESCRIPTION	QTY	Unit	RATE incl. VAT, Duties & Other Taxes/Charges (Delivered Duty Paid-DDP) €	Total incl. VAT €
1.000	**Preamble** The Architect and Civil Engineer in charge/ Engineer/ Supervisor shall have power to order any modification to any part of the works necessary for the proper completion and/or functioning of the works. Such modifications may consist of additions, omission substitutions, changes in quality, quantity, form, character, kind, position, dimension, level or line and changes in the specified sequence, method or timing of execution of the works. No order for a modification may result in the invalidation of the contract				
2.000	**Preliminaries**				
2.001	Appoint an authorised Occupational Health and Safety Officer who shall ensure that all works comply to all safety requirements as spelled out in this contract and as required by all statutory Local and National Authorities (Local Councils, Police, Occupational Health and Safety Authorities, etc). Rate shall also include for the payment of all certification of machinery, equipment (vehicles, cranes, etc.) required for the execution of works described in this document	1	Lump sum		
2.002	Allow for making all the necessary traffic arrangements, engagement of all necessary wardens, police, etc as required by Local or National Law, for the whole duration of works, payment of any charges (Local Council, police, etc) for the operation of machinery and equipment, payments for the removal (temporary or permanent) of any services (electricity, water supply, drainage, telephone, Cable TV, etc) for executing the works in a safe manner and to the specifications as outlined in this document.	1	Lump sum		
				C/F	

ITEM No	DESCRIPTION	QTY	Unit	RATE incl. VAT, Duties & Other Taxes/Charges (Delivered Duty Paid-DDP) €	Total incl. VAT €
				B/F	
2.002	Allow for making all the necessary traffic arrangements, engagement of all necessary wardens, police, etc as required by Local or National Law, for the whole duration of works payment of any charges (Local Council, police, etc) for the operation of machinery and equipment, payments for the removal (temporary or permanent) of any services (electricity, water supply, drainage, telephone, Cable TV, etc) for executing the works in a safe manner and to the specifications as outlined in this document.	1	Lump sum		
2.003	Allow for the use of all necessary machinery equipment, etc not mentioned elsewhere in this, bill of quantities for the careful execution of works to the approval of the architect and civil engineer in charge and as specified in this document .	1	Lump sum		
2.004	Allow for all insurances specified in this contract mainly, insurance against damage to third parties and insurance against each parties liability for any loss, damage, death or bodily harm that may be caused to third parties property belonging to third parties, and any person that is authorised to be onsite at any given time.	1	Lump sum		
				C/F	

ITEM No	DESCRIPTION	QTY	Unit	RATE incl. VAT, Duties & Other Taxes/Charges (Delivered Duty Paid-DDP) €	Total incl. VAT, € €
				B/F	
	Items 3.000 to 6.000 refer to the Supply Tender for Mobile Office to the Plant Biotechnology Centre, Lija				
3.000	**Mobile office**				
3.001	Supply/fabricate, assemble and deliver mobile office, approximately 6m long by 2.4m wide by 2.7m high, to site as indicated by Architect and Civil Engineer in charge, levelled and fork lifter and any accessories required for transportation are to be supplied with the office itself. Rate is to include to properly level the existing terrain where the Mobile Home is to be placed and the necessary external steps if required. Rate is to include for the provision of a fully functional mobile office subject to the items 4.000 to 5.000 and to the connection of the mobile offices to the electricity and telephone grids (service provided by employer).	1	No.		
4.000	**Furniture**				
4.001	**Desk** – Supply, delivery and assembly of rectangular desk of 720mm height, and to satisfy specifications and dimensions as per 8.5.13.1	**4**			
4.002	**Bookcase –** Supply, delivery and assembly of a bookcase in The form of a lockable high cabinet, with two thick high Doors and to satisfy specifications and dimensions as per 8.5.13.2	**1**			
4.003	**Low Cabinet –** Supply, delivery and assembly of a low Cabinet with two (2) doors. Cabinet to satisfy specifications and dimensions as per 8.5.13.3	**1**			
4.004	**Chest of drawers -** Supply, delivery and assembly of chest Of drawers to fit under desks, leaving enough leg space To satisfy specifications and dimensions as per 8.5.13.4	**4**			
4.005	**Swivel Chairs –** Supply, delivery and assembly of swivel chair with arms on five-star base on castors to satisfy specifications as per 8.5.13.5	**3**			
	Executive Armchair – must be swivel and have a five star moulded aluminium base with steel cone and soft twin wheel castors. To specify specifications as per 8.5.13.5	**1**			
				C/F	

ITEM No	DESCRIPTION	QTY	Unit	RATE incl. VAT, Duties & Other Taxes/Charges (Delivered Duty Paid-DDP) €	Total incl. VAT, €
5.000	**Electrical Works** Rates are to include for the all works on the telephone, light and power circuits and connection with earth electrode (provided by contractor), with the telephone grid, with the electricity grid and the installation of the electricity meter. Rates are to include for the necessary trunking and the testing/ commissioning of the above.			B/F	
5.001	Electrical, power and telephony as per specifications.	1	Lump sum		
6.000	**Climate Control** Supply, deliver to site, install, connect up and commission the following equipment. Provision of warranty for 36 months The cooling capacity of the unit offered shall NOT be less than that indicated in the bill below. Only equally or larger sized units shall be accepted.				
6.001	Split type with high wall mounted indoor unit. Cooling capacity 3.00 kW.	2	No.		
6.002	Warranty of units for duration of 36 months.	1	Lump sum		
7.000	**Electrical Supply to Mobile Office**				
7.001	Supply and install of U-channel galvanised steel cable tray 200mm x 80mm, including brackets and all necessary hardware.	21	m		
7.002	*Supply and install XLPE armoured cable as follows:*				
	a) Supply of 5-core Armoured Cable XLPE of $10mm^2$	50	m		
	b) Install cable on cable tray	21	m		
	c) Install cable in trench	2	m		
	d) Install cable in chased wall	12	m		
	e) Supply and install Nickel-plated brass (standard material) glands for the armoured cable.	2	m	C/F	
	f) Complete both connections with glands and termination, testing and certification to latest IEE regulation standard.	1	Lump sum		

ITEM No	DESCRIPTION	QTY	Unit	RATE incl. VAT, Duties & Other Taxes/Charges (Delivered Duty Paid-DDP) €	Total incl. VAT, €
7.003	*Supply and install and connect switchgear as specified, including cabinet enclosure and all protective and all control devices as follows:* a) IP65 IK10 Enclosure Cabinet, double isolation, including wiring and accessories	1	Lump sum		
	b) Supply and install of 1 x 4 Pole MCCB Rating 63 Amp	1	No.		
	c) Supply and install of 1 x 4 Pole RCD 60 Amp	1	No.		
7.004	*Supply and install of IP65 outdoor Utility Distribution Box to standard EN 60439 for mobile office area consisting of :* • Earth Leakage Protection and individual MCB protection for socket outlets mentioned below • Two(2) blue 3-pin 32A industrial sockets outlet for 220V • One (1) red 5-pin 32A industrial socket outlet for 400V • One (1) watertight 3-pin 13A domestic socket outlet for 220V • Refer to Appendix A schematic layout	1	Lump sum		
7.005	Supply and install earth electrode near utility distribution box including earth pit, test clamp, earth bar and all interconnecting wiring and bonding as per latest IEE regulations	1	Lump sum		
7.006	To test, certify and commission to latest IEE / Enemalta regulations and to issue necessary signed certificates with schematic layout of all related electrical system installed	1	Lump sum		
8.000	**Supply of Computer Network Equipment and Installation**				
8.001	Supply & Install 9U, Wall Mounted cabinet 600mm (width) x 600mm (depth), lockable glass front door.	1	No		
8.002	Supply & Install of 24 port Gbic Switch	1	No		
8.003	Supply & Install 24 Port Patch Panel Cat5e UTP (1U)	1	No		
8.004	Supply & Install Cable Management Bar (1U)	2	No		
8.005	Supply & Install Dual Outlet Cat5e UTP	8	No		
				C/F	

ITEM No	DESCRIPTION	QTY	Unit	RATE incl. VAT, Duties & Other Taxes/Charges (Delivered Duty Paid-DDP) €	Total incl. VAT, €
				B/F	
8.006	Supply & Install 4 Port Duplex SC fibre tray (including multimode adaptors and internal cable management, and pigtails)	1	No		
8.007	Supply 8 count 4 Pair OM1 62.5/125 Armour and Rodent proof Fibre Cable.	60	m		
8.008	Supply & Install 6 Output rackmountable PDU	1	No		
8.009	Supply & Install Rackmountable UPS	1	No		
8.010	Supply of Cat5e UTP cable	100	M		
8.011	Laying of copper cable		Lump sum		
8.012	Laying of fibre cable		Lump sum		
8.013	Drilling of masonry holes as necessary		Lump sum		
8.014	Supply & Install Fibre Patch Chord SC to LC Duplex OM1 62.5/125 (1m)	2	No		
8.015	Supply & Install Patch Chords Cat5e UTP 3m Grey	8	No		
8.016	Supply & Install Patch Chords Cat5e UTP 1m Grey	8	No		
8.017	Termination, testing & labelling of Cat5e UTP cable	16	No		
8.018	Splicing, testing & labelling of fibre core (4 - 4) 4 Splices in Greenhouse & 4 Splices in Mobile Unit	8	No		

Name of Tenderer: _____ **Date:** _____

I.D. No.: _____ **Signature:** _____

TENDER SUBMISSION CHECKLIST

The Tenderer is requested to tick in the boxes below to cross check that all documentation required in the Tender Document are completely filled-in and submitted with his/her Tender submission.

SCHEDULE OF RATES & PRICES ☐

TENDERER'S DETAILS FORM ☐

FORM OF TENDER ☐

DATA ON JOINT VENTURE/ CONSORTIUM FORM (IF APPLICABLE) ☐

SUB-CONTRACTING FORM (IF APPLICABLE) ☐

STATEMENT ON CONDITIONS OF EMPLOYMENT FORM ☐

LAYER 2 SWITCH QUESTIONAIRE ☐

TECHNICAL LITERATURE, ETC (Clause 1.2.8) ☐

ALL ADDENDA IS ATTACHED WITH THE SUBMISSION (IF ANY) ☐

NO ALTERATIONS TO THE DOCUMENT HAVE BEEN MADE ☐

Name of Tenderer: _____ **Date:** _____

I.D. No.: _____ **Signature:** _____

MODEL PERFORMANCE GUARANTEE

Head of Directorate concerned

In connection with the agreement entered into between yourself on behalf of the Malta Government and ……..……..……..……..……..……..……..……..……

(Name and Address of Contractor)

Referred to as "the Contractor" as per the latter's tender dated …….. and your Acceptance (Ref. ……..……..……) of the ……..……..……whereby the Contractor undertook to provide, supply, deliver to site / store, erect complete, hand over in working order and thereafter maintain* in accordance with the terms of the Tender Specifications and Conditions the works/services as mentioned, enumerated or referred to in the Specifications and/or Bills of Quantities forming part of the tender documents, we hereby guarantee to pay you on demand a maximum sum of (amount in words and figures) ……..……..……(€). in case the obligations under the above mentioned agreement are not duly performed by the Contractor.

It is understood that this guarantee will become payable on your first demand and that it shall not be incumbent upon us to verify whether such demand is justified.

For avoidance of doubt it is hereby declared that although this instrument gives rise to legal relations between the guarantor and Government it is hereby specifically declared for all intents and purposes of law that this guarantee does not exempt the above-mentioned Contractor from any obligations, acts of performance or undertakings assumed under the tender documents as ratified in the Contract.

Any payments due to the Contractor in respect of the obligations entered into under the contract above referred to shall be made through this Bank.

This guarantee expires on the ……..……..……..…… **and unless it is extended by us or returned to us for cancellation before that date any demand made by you for payment must be received in writing not later than the aforementioned expiry date.**

This document should be returned to us for cancellation on utilization or expiry or in the event of the guarantee being no longer required.

……..……..……..……
(Local Bank) Manager

……..……..……..…..
Accountant

……..
Contractor

I accept in their entirety the conditions set out above

*** Delete as applicable**

LAYER 2 Switch Specifications

Access Switch – (Layer 2 – of the OSI reference model)		
	Details	
	Brand	
	Model	
	Delivery (number of weeks)	
	Warranty (number of years)	
		Compliance
Ref ‘n’	**Physical Characteristics**	**Circle your submission**
	1 Rack Unit height.	YES / NO
	Supplied with Telco type brackets for 19-inch Telco type racks.	YES / NO
	Mounts in EIA Standard 19-inch Telco type racks.	YES / NO
	Internal Power Supply Unit – (200-240 Voltage – Alternative Current) complete with (UK AC-IEC – C13 10-13 AMP) AC Power cable.	YES / NO
	Architecture & Performance:	
	Supports Stacking architecture with single IP address for management.	YES / NO
	Throughput: 41 million packets per second (Minimum). Note: As part of the response, bidders are to specify the throughput of the specified switch.	YES / NO
	Switching fabric performance - 56 Gbps (Minimum). Note: As part of the response, bidders are to specify the switching fabric performance of the Flash Memory of the specified switch.	YES / NO
	MAC Address table size - 16,000 entries (Minimum). Note: As part of the response, bidders are to specify the size of the MAC Address table of the specified switch.	YES / NO
	Minimum support of 512 VLANS Note: As part of the response, bidders are to specify the maximum number of VLANS	YES / NO
	Ports Density & Memory:	
	Minimum 24 Auto-Negotiation, Auto-MDIX, RJ45 10/100/1000 ports compliant with IEEE 802.3 (10Base-T), IEEE 802.3u (100Base-TX) and with IEEE 802.3ab (1000Base-T) standards. Duplex: 10BASE-T or 100BASE-TX:- half or full duplex 1000BASE-T:- full duplex only Note: The specified ports must not from part of a combo ports group.	YES / NO
	Minimum 4 fixed Small Form-factor Pluggable (SFP) slots Mini-GBIC open slots for optical 1000Base-SX or 1000Base-LX Gigabit or 1000Base-LH	YES / NO

	Gigabit Fibre Ports. Note: The specified ports must not from part of a combo ports group.	
	1 RJ-45 and/or 1 USB micro-B Management Console Port for out-of-band management.	YES / NO
	No Redundant Power Supply (RPS) Port required	YES / NO
	Flash Memory - 128MB (Minimum). Note: As part of the response, bidders are to specify the memory size of the Flash Memory of the specified switch.	YES / NO
	DDR3 DIMM - 256MB (Minimum). Note: As part of the response, bidders are to specify the memory size of the SDRAM of the specified switch.	YES / NO
Management / Monitoring:		
	Management through Command Line Interface (CLI) and Hyper Text Transfer Protocol (HTTP) Web browser GUI Interface.	YES / NO
	RFC-792 Internet Control Management Protocol (ICMP).	YES / NO
	RFC-3376 Internet Group Management Protocol (IGMP) Version 3.	YES / NO
	RFC-783 – Trivial File Transfer Protocol (TFTP) Revision 2.	YES / NO
	RFC-951/RFC-1542 IP/UDP Bootstrap Protocols (BOOTP).	YES / NO
	Troubleshooting protocol such as IEEE 802.1AB Link Layer Discovery Protocol (LLDP) or equivalent to test and discover Layer 2 point-to-point connectivity. This protocol periodically must check connectivity and shall send update messages. The message must include details such as, (device name, device capabilities, device software version, and device IP address). Note: As part of the response, bidders are to specify the protocol and it's version number	YES / NO
	RFC-2030 Simple Network Time Protocol (SNTP) Version 4.	YES / NO
	RFC-868 Time Protocol which provides a way to poll the current time from a time server.	YES / NO
	RFC-854 Telnet Protocol.	YES / NO
	HTML Management Interface.	YES / NO
	Simple Network Management Protocol (SNMP) versions 1,2c and 3.	YES / NO
	Device must be fully compatible and fully controllable through one of the following already installed management tools Cisco works LMS Ver4.2 or HP Procurve Manager Ver4.00 Suppliers may also specify an alternative management application tool, should this provide the following minimum features :- • Mass configuration deployments, • Automatic device configuration backup, • Mass operating system upgrades, • Secure web access management interface, • Support SNMP V2,V2c & V3, • Manage devices through encrypted protocols such as SSH and HTTPS.	YES / NO

	Preferably these tools should also provide :- • Configuration change audit. The cost of the alternative management application tool should be quoted separately. The additional quotation should be annexed with the submission and should indicate the cost of all necessary licences to install the software in a virtual environment. The supplier should also quote the installation/configuration of the new management application and the cost of training required to support the equipment.	
MIB support:		
	RFC-2618 Authentication Dial-In User Service (RADIUS) Client (MIB).	YES / NO
	RFC-2620 RADIUS Accounting Client MIB	YES / NO
	RFC-2674 Managed Objects for Bridges with Traffic Classes, Multicast Filtering and Virtual LAN Extensions.	YES / NO
	RFC-1493 Managed Object for Bridges (MIB).	YES / NO
	RFC-2863 Interfaces Group (MIB).	YES / NO
	RFC-1213 Management Information Base for TCP/IP Network Management (MIB II).	YES / NO
	RFC-2737 Entity (MIB) Version 2.	YES / NO
	RFC-2665 Managed Object for Ethernet-like Interface type (MIB).	YES / NO
	RFC-2819 Remote Network Monitoring Management Information Base.	YES / NO
	RFC-2613 Remote Network Monitoring MIB Extensions for Switched Networks (MIB).	YES / NO
	RFC-2021 Remote Network Monitoring Management Information Base Version 2 using SMIv2.	YES / NO
Security:		
	RFC-1492 Access Controller Access Control Systems Plus (TACACS+).	YES / NO
	Secure Shell (SSHv1, SSHv2) Protocols.	YES / NO
	Secure Sockets Layer (SSL).	YES / NO
	IEEE 802.1x Port-Based Access Authentication standard.	YES / NO
	IEEE 802.1x with Guest Vlan.	YES / NO
	RFC-2138 Radius Authentication.	YES / NO
	RFC-2866 Radius Accounting.	YES / NO
Quality of Service (QOS)/Class of Service (COS):		
	RFC 2474 Differentiated Services precedence, with 4 queues per port	YES / NO
	RFC 2475 Differentiated Services Architecture	YES / NO
	RFC 2597 Differentiated Services Assured Forwarding (AF)	YES / NO
	RFC 2598 Differentiated Services Expedited Forwarding (EF)	YES / NO

Other Protocols & Standards:		
	IEEE 802.3x Flow Control protocol.	YES / NO
	IEEE 802.3ab 1000Base-TX.	YES / NO
	IEEE 802.1d Spanning Tree Protocol (STP).	YES / NO
	IEEE 802.1w Rapid Convergence Spanning Tree Protocol (RSTP).	YES / NO
	IEEE 802.1s Multiple Spanning Tree Protocol (MSTP).	YES / NO
	IEEE 802.1ad Link Aggregation Control Protocol (LACP).	YES / NO
	IEEE 802.1q VLANs Support.	YES / NO
	IEEE 802.1q VLAN Tagging.	YES / NO
	IEEE 802.1p Layer 2 Quality of Service / Class of Service (QoS/CoS) Protocol for Traffic Prioritization.	YES / NO

ANNEX B Government of Malta Policy on Computer Network Configuration

Purpose

This configuration baseline aims to achieve consistency and standardization in the configuration of networking equipment across Government.

Definitions

Term	Definition
Asynchronous Transfer Mode (ATM)	A form of very fast packet switching in which data is carried in fixed length units called "cells". Each cell is 53 bytes in length, with 5 bytes used as a header in each cell. ATM employs mechanisms that can be used to set up virtual circuits between users, in which a pair of users appear to have a dedicated circuit between them.
Attenuation Crosstalk Ratio (ACR)	The difference between attenuation and crosstalk, measured in dB, at a given frequency. A quality factor for cabling to assure that signal sent down a twisted pair is stronger at the receiving end of the cable than any interference imposed on the same pair by crosstalk from other pairs.
American Wire Gage (AWG)	A wire diameter specification. The smaller the AWG number, the larger the wire diameter.
Backbone	A cable connection used to connect telecommunication or wiring closets, floor distribution terminals, entrance facilities, and equipment rooms either within or between buildings. In star networks, the backbone cable interconnects hubs and similar devices, as opposed to cables running between hub and station.
Bandwidth	The range of frequencies required for proper transmission of a signal. Expressed in Hertz (cycles per second). The higher the bandwidth, the more information that can be carried. A continuous range starting from zero is said to be "baseband", while a range starting substantially above zero is "broadband".
Baud	The number of changes in signal per second. A given baud rate does not necessarily transmit an equal number of bits/sec. For example, a signal with four voltage levels may be used to transfer two bits of information for every baud.
Bend Loss	A form of increased attenuation in an optical fibre caused by an excessively small bend radius. The attenuation may be permanent if micro fractures caused by the bend continue to affect transmission of the light signal.
Bend Radius	Radius of curvature that a fibre optic or metallic cable can bend before the risk of breakage or increased attenuation occurs.

Term	Definition
Broadband	A transmission facility having a bandwidth sufficient to carry multiple voice, video or data channels simultaneously. Each channel occupies (is modulated to) a different frequency bandwidth on the transmission medium and is demodulated to its original frequency at the receiving end. Channels are separated by "guard bands" (empty spaces) to ensure that each channel will not interfere with its neighbouring channels. This technique is used to provide many CATV channels on one coaxial cable.
Carrier Sense Multiple Access with Collision Detect (CSMA/CD)	A network access method used by Ethernet in which a station listens for traffic before transmitting. If two stations transmit simultaneously, a collision is detected and both stations wait a brief time before attempting to transmit again.
Category 1 **(CAT 1)**	Unshielded twisted pair used for transmission of audio frequencies. Used as speaker wire, door bell wire, etc. Not suitable for networking applications.
Category 2 **(CAT 2)**	Unshielded twisted pair used for transmission at frequencies up to 1.5 Mhz. Used in analog telephone applications. Not suitable for networking applications.
Category 3 **(CAT 3)**	Unshielded twisted pair with 100 ohm impedance and electrical characteristics supporting transmission at frequencies up to 16 MHz. Defined by the TIA/EIA 568-A specification.
Category 4 **(CAT 4)**	Unshielded twisted pair with 100 ohm impedance and electrical characteristics supporting transmission at frequencies up to 20 MHz. Defined by the TIA/EIA 568-A specification.
Category 5 **(CAT 5)**	Unshielded twisted pair with 100 ohm impedance and electrical characteristics supporting transmission at frequencies up to 100 MHz. Defined by the TIA/EIA 568-A specification.
Category 5e, Enhanced CAT5 **(CAT5e, CAT5+)**	Category 5e is a new standard that will specify transmission performance that exceeds CAT5. CAT5e has improved specifications for NEXT, PSELFEXT, and Attenuation. Like CAT5, it consists of unshielded twisted pair with 100 ohm impedance and electrical characteristics supporting transmission at frequencies up to 100 MHz. To be defined in the TIA 568-A-5 update.
Category 6 **(CAT 6)**	Category 6 is a proposed standard that aims to support transmission at frequencies up to 250 MHz over 100 ohm twisted pair.
Category 6a **(CAT6a)**	Category 6a aims to support transmission at frequencies up to 500 MHz over 100 ohm twisted pair
Category 7 **(CAT 7)**	Category 7 is a proposed standard that aims to support transmission at frequencies up to 600 MHz over 100 ohm twisted pair.
Community antenna television **(CAT TV)**	"Cable TV" or CATV is a broadband transmission facility which generally uses a 75 Ohm coaxial cable to carry numerous frequency-divided TV channels simultaneously.
Crosstalk	The coupling of unwanted signals from one pair within a cable to another pair. Crosstalk can be measured at the same (near) end or far end with respect to the signal source
Customer Premises	Buildings, offices, and other structures under the control of a elecommunications customer.
Electronic Industry Association **(EIA)**	Formerly RMA or RETMA is an association of manufacturers and users that establishes standards and publishes test methodologies.

Term	Definition
Equal-Level Far-End Crosstalk (ELFEXT)	The Equal-Level Far-End Crosstalk (ELFEXT) test measures Far-End Crosstalk (FEXT). FEXT is very similar to NEXT, but happens at the receiver side of the connection. Due to impedance on the line, crosstalk diminishes the signal as it gets further away from the transmitter. Because of this, FEXT is usually less detrimental to a signal than NEXT, but still important nonetheless.
Ethernet	The most widely-installed Local Area Network technology. Now, specified in a standard, IEEE 802.3 typically uses coaxial cable or special grades of twisted pair wires. The most commonly installed Ethernet systems are called 10BASE-T and provide transmission speeds up to 10 Mbps. Other flavours of Ethernet include Fast Ethernet and Gigabit Ethernet.
Far End Cross Talk (FEXT)	Crosstalk that is measured on the quiet line at the opposite end as the source of energy on the active line. FEXT is not typically measured in cabling, with Near End Cross Talk (NEXT) being the preferred crosstalk measurement.
Fast Ethernet	Ethernet standard supporting 100 Mbps operation.
Fibre Distributed Data Interface (FDDI)	An ANSI Standard (ANSI X3T12) for a 100 Mbps token passing network based on fibre-optic (FDDI) and twisted-pair (CDDI) cabling.
Fibre Optics	The technology in which communication signals in the form of modulated light beams are transmitted over a glass fibre transmission medium. Fibre optic technology offers high bandwidth, small space needs and protection from electromagnetic interference, eavesdropping and radioactivity.
Horizontal Cabling, Horizontal Wiring	The portion of the cabling system that extends from the work area outlet to the horizontal cross connect in the telecommunications or wiring closet.
Insulation Displacement Contact/Connector (IDC)	A type of wire terminating connection in which the insulating jacket is cut by the connector when the wire is inserted.
Institute of Electrical and Electronics Engineers (IEEE)	A professional organization and standards body. The IEEE Project 802 is the group within IEEE responsible for LAN technology standards.
Interference	Undesirable signals which interfere with the normal operation of electronic equipment or electronic transmission.
International Tele-communications Union (ITU)	An international organization that develops communications standards.
Near-End Crosstalk	NEXT is an error condition that describes the occurrence of a signal from one wire pair radiating to and interfering with the signal of another wire pair. It is the difference in amplitude (in dB) between a transmitted signal and the crosstalk received on other cable pairs at the same end of the cabling. Higher NEXT values correspond to better cabling performance.
Network	A group of two or more computer systems linked together.
Node	End point of a network connection. A Node includes any device connected to a network such as a file server, printer, or workstation.
Optical Time Domain Reflectometry	A method for evaluating optical fibre based on detecting and measuring backscattered (reflected) light. Used to measure fibre length and attenuation, evaluate splice and connector joints, locate faults, and certify cabling systems.

Term	Definition
Patch Panel	A passive device, typically flat plate holding feed through connectors, to allow circuit arrangements and rearrangements by simply plugging and unplugging patch cables.
Power Sum Equal Level Far End Crosstalk (PSELFEXT)	The combined effect of equal level far end crosstalk from all the other pairs within the cable.
Power Sum Near End Crosstalk (PSNEXT)	The combined NEXT loss received by a cable pair from all the other pairs within the cable.
Repeater	A device that receives, amplifies (and sometimes reshapes), and retransmits a signal. It is used to boost signal levels and extend the distance a signal can be transmitted. It can physically extend the distance of a LAN or connect two LAN segments.
Riser	The conduit or path between floors of a building into which telephone, networking, and other utility cables are placed to bring service from one floor to another.
Riser Cable	A type of cable used in vertical building shafts, such as telecommunications and utility shafts. Riser cable typically has more mechanical strength than general use cable and has an intermediate fire protection rating.
RJ-45	A USOC code identifying an 8-pin modular plug or jack used with unshielded twisted pair cable. Officially, an RJ-45 connector is a telephone connector designed for voice grade circuits only. RJ-45 type connectors with better signal handling characteristics are called 8-pin connectors in most standards documents, though most people continue to use the RJ-45 name for all 8-pin connectors.
Screened Twisted Pair cable (ScTP)	Four pair UTP, with a single foil or braided screen surrounding all four pairs in order to minimize EMI radiation or susceptibility. Screened twisted pair is sometimes called Foil Twisted Pair (FTP). ScTP can be thought of as a shielded version of the Category 3, 4, & 5 UTP cables.
Screened/Shielded Twisted Pair (SSTP)	Four pair cabling, with each pair having its own individual Shield, in addition to an overall shield surrounding all four pairs. SSTP offers similar performance to Type 1 STP except with 4 pairs (rather than 2) and in a 100 ohm impedance (rather than 150).
Segment	On Ethernet a media segment may be made up of one or more cable sections joined together to produce a continuous cable for carrying Ethernet signals.
Shielded Twisted Pair (STP)	A type of twisted pair cable in which the pairs are enclosed in an outer braided shield, although individual pairs may also be shielded. STP most often refers to the 150 ohm IBM Type 1, 2, 6, 8, & 9 cables used with Token Ring networks.
Signal to noise ratio	The ratio of received signal level to received noise level, expressed in dB. Abbreviated S/N. A higher S/N ratio indicates better channel performance.
Single Mode Fibre	An optical fibre that will allow only one mode to propagate. The fibre has a very small core diameter of approximately 8 urn. It permits signal transmission at extremely high bandwidth and allows very long transmission distances.
Telecommunications Industry Association (TIA)	Body which authored the TIA/EIA 568-A "Commercial Building Telecommunications Wiring Standard" in conjunction with EIA.

Term	Definition
Time Division Multiplexing (TDM)	A technique for combining many signals on a single circuit by interleaving bits or bytes of data from successive channels.
Time Domain Reflectometry	A technique for measuring cable lengths by timing the period between a test pulse and the reflection of the pulse from an impedance discontinuity on the cable. The returned waveform reveals many undesired cable conditions, including shorts, opens, and transmission anomalies due to excessive bends or crushing. The length to any anomaly, including the unterminated cable end, may be computed from the relative time of the wave return and nominal velocity of propagation of the pulse through the cable. See also Optical Time Domain Reflectometry.
Transmission Media	Anything such as wire, coaxial cable, fibre optics, air or vacuum, that is used to carry a signal.
Twisted Pair	A multiple conductor cable whose component wires are paired together, twisted, and enclosed in a single jacket. Each pair consists of two insulated copper wires twisted together. When driven as a balanced line, the twisting reduces the susceptibility to external interference and the radiation of signal energy. Most twisted-pair cabling contains either 2, 4, or 25 pairs of wires.
Unshielded Twisted Pair (UTP)	Twisted pair cabling that includes no shielding. UTP most often refers to the 100 ohm Category 3, 4, & 5 cables specified in the TIA/EIA 568-A standard.
Wide Area Network (WAN)	A network connecting computers within very large areas, such as states, countries, and the world.

Rules for cable length within 100BaseT and 100BaseSx networks

When connecting two 100BaseT nodes in full duplex mode, the maximum distance should not exceed 100 metres +/1 5% for twisted pair. In multimode SX fibre optic, distance shall not exceed 550 metres.

100BaseT and 100BaseF uplinks

Uplinks are used to provide connectivity between networking devices. Uplinks between LAN Switches shall not exceed the length of 100 metres +/- 5% when using twisted pair cabling, and 550 metres when using fibre optic cable.

In either case, uplinks shall not be restricted only to one, so that redundancy and other layer 2 configurations like port-channelling (or uplink aggregation) can be achieved.

Laying of cable

Laying of cable is the terminology used to define the scope of the wiring and the topology used within the Local Area Network. The sections below define various forms of cable laying in further detail.

Laying of cable – Horizontal cabling

The horizontal cabling/wiring is the portion of the cabling system that extends from the work area outlet to the rack. The horizontal wiring includes the telecommunications outlet in the work area, the mechanical termination for the horizontal cable and cross-connections located in the racks.

To satisfy today's telecommunications and applications requirements, the horizontal cabling shall facilitate ongoing maintenance and relocation, and accommodate further equipment and services.

The horizontal wiring shall be a star topology, i.e. each single wall port shall be connected to the rack individually. The maximum distance between the patch panel and the wall port shall be 90m (when adding the patching leads at both ends, it would add up to 100 metre). Refer to Figure 1 below.

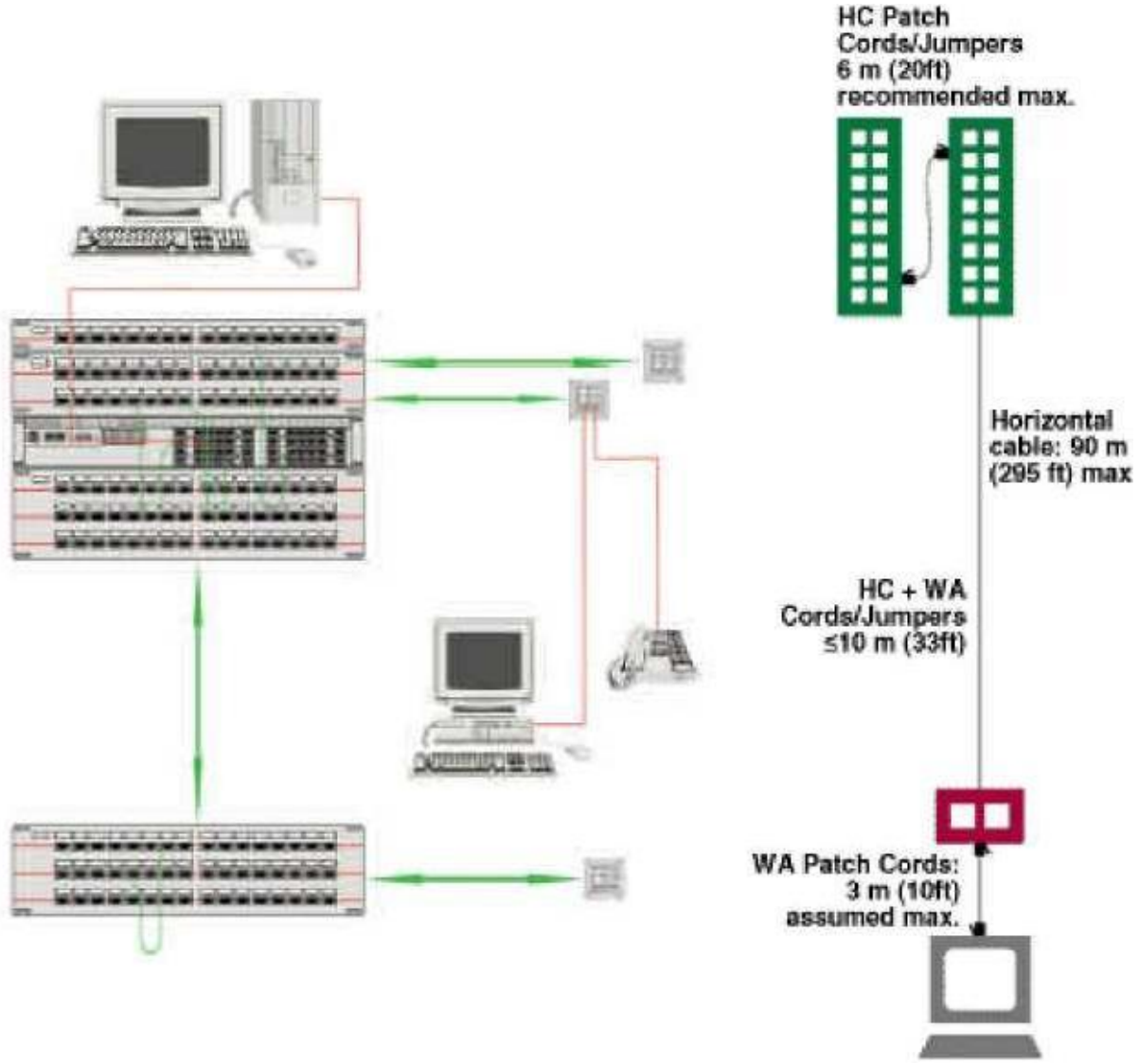


Figure 1 - Distance recommendations for horizontal cabling

Laying of cable – Backbone or vertical cabling

The function of the backbone wiring is to provide interconnections between telecommunications closets, equipment rooms, and entrance facilities in the telecommunications wiring system structure.

It is typically not possible or economically justifiable to preinstall backbone wiring for the entire life of a telecommunications wiring system. The useful life is therefore expected to consist of one or several planning periods, each period spanning between three to ten years following which, new technologies would be required to cater for the different requirements. During each planning period, growth and changes in service requirements are intended to be accommodated without installation of additional wiring. In this regard, it is highly recommended to use MultiMode or SingleMode fibre optic cabling backbone cabling since this medium is more scalable than copper. Moreover, fibre optic cable is not susceptible to electromagnetic interference (EMI) generated from motors, transformers and fluorescent lights as in the case of copper cabling.

Some points specified for the backbone cabling subsystem include:

- The backbone cabling shall be configured in a physical star topology. Each horizontal cross connect is connected directly to a main cross-connect or to an intermediate cross-connect, which is then connected to a main cross-connect.
- In case of copper based uplinks, the total maximum backbone distance of 100m (295 ft.) is specified for high bandwidth capability over copper. This distance is specified for uninterrupted backbone runs. (No intermediate cross-connects).
- Fibre optic cables shall be 125µ/50µ multimode fibre or 125µ/9µ single mode fibre
    - The most common types of fibre optic connectors are:
        - ST
        - SC
        - LC - Also known as SPF, Small Form Factor & Mini Gibic
        - MT-RJ
        - FC
        - VF-45
        - MIC

For cable installation best practices, refer to Appendix A.

Terminations and testing

Testing of the installed cabling is critical in both UTP and Fibre optic cable installations. Testing verifies the cable has been installed and terminated correctly and that the products have been manufactured in accordance to the ANSI standards. In copper cabling tests, just because the cable has continuity does not mean that data packets, which are transmitted over the cable, are readable. One shall ensure that copper cables tests also include the below mentioned tests under section
3.2.5.1 – Copper Link Certification.

UTP terminations shall follow the T568B standard as shown in Figure 2.

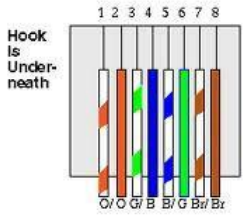


Figure 2 - T568B wire map

Copper Link Certification

Such certification is based upon a test which checks connectivity from the patch panel to the networking outlet (or wallport). The test aims to ensure that the wire condition and terminations are within certain parameters, thus ensuring a reliable data communication between source and destination nodes. The **minimum** UTP category standard to be used is CAT5e.

Copper link Channel Certification

This certification is based upon tests which cover the patch cords to the information outlet, the patch panel and the horizontal run. The test results can then be used by the client to troubleshoot problems within these cables and rectify accordingly.

The following areas shall be covered by the tests:

1. Continuity of wire map - If a cable fails this test, the problem is at the terminations and a wire is either loose, crossed, or one end is a 568A and the other is a 568B. Other options are a bad RJ-45, a bad cable, or a cable that has been damaged during installation.
2. Length - It shall be installed per ANSI 568-A recommendations. If the cable fails this test there are a number of options. One option is to reduce the cable to bring it into standards (if possible).
3. Attenuation - Attenuation is the signal strength at the end of the wire loop. As a general rule of thumb, the longer the cable, the less strong the signal is. This is mainly caused by the resistance of the copper cable. Once a packet traverses a cable which is longer than 100 metres +/- 5%, signal degeneration occurs making a packet unreadable. If a cable fails this test it is recommended that the cable be replaced. The cable is likely to have been damaged during installation and a new cable shall need to be installed. An unlikely problem is that the cable was damaged during the manufacturing process. In either case the cable shall need to be replaced.
4. Attenuation to Cross-talk Ratio (ACR) - This test compares the ratio of strength between wire pairs due to the interference caused by signals in accompanying pairs. This test is a measure of the remaining signal strength following network operation at heavy **Wire Map.** It also ensures that the network-connection is correctly wired-up. Near-end cross talk (NEXT) - If a cable fails this test, check to see if the terminations are untwisted more than 13mm and the length of the exposed conductors is longer than 2.54cm (1 inch). If both ends are within their measurements, then either the RJ-45 **is bad or** the cable has been damaged and untwisted during installation.
5. Impedance - This test shall ensure that the impedance of the cable is constant across the normal operating bandwidth.
6. Capacitance - This test shall ensure that capacitance between any two pairs is within limits. This is done in order to avoid potential signal distortion. EMI may or may not show up during the testing process. If the cable has been installed too close to a source of EMI and the EMI source is active, the tester will not allow the test to be run. If the source of EMI is not active during the testing of the cable but is active during the operations of the LAN, there will be an intermittent problem to troubleshoot.

Success in all of the above tests would guarantee that the data being transmitted on this media will be successfully received by the host. Any failures in any one of these tests would mean that the data can get scrambled to an unreadable manner or lost during transmission.

Installing Local Area Networks

This section is intended to provide general guidelines for the installation of Local Area Network

Installing the telecommunications Cabinet Termination Area

Installation and accessibility equipment requirements

To ensure health and safety with the additional benefit of easy Local Area Network troubleshooting and installation of passive and active networking equipment, the following guidelines shall be followed:

- Cabinet shall be no less than 800mm at its width and 800mm at its depth. It shall also be no less than 15 Rack Unit in height
- A minimum of 1 metre clearance space shall be available on all sides of the networking cabinet. Clearance space at the front of the cabinet shall allow the cabinet door to be opened by a minimum of 90 degrees.
- Cabinets shall not be positioned or wall mounted beneath windows.
- Safe ladders are to be made available for pre-installed highly mounted cabinets.
- Any windows leading directly to communications cabinets shall have security bars in place.
- Newly installed wall mounted communications cabinets shall be no more than 2 metres high above floor level.
- New Cabinets shall be kept at a minimum distance of 2 meters away from Electrical Distribution units.
- New Cabinets shall be installed in rest rooms, kitchenettes, corridors and other public, easily accessible areas like class rooms and receptions
- It is recommended to keep the amount of communication cabinets to the very minimum.
- All networking cabinets shall be unobstructed and installed in such a way that support personnel can carry out their duties safely and without any difficulties:
    - Furniture shall not obstruct the way to the cabinet
    - The room housing the networking cabinet/s shall not be used as store rooms also since this will clearly obstruct support to the LAN
    - It shall be ensured that the networking cabinets door can be opened in full without any obstructions
- It is recommended to leave at least 7 Rack Unit Heights free in all networking cabinets free for network scalability purposes

Grounding

- Each installed cabinet shall be grounded using an earth cable in accordance to the IEEE 1100 Standard and Regulations. The most recent version of the standard shall be applied.
- If, within a Local Area Network, more than one communications cabinet is used to house the networking equipment, the earth for these cabinets shall be sourced from a common circuit. Failure to do so may result in potential difference between circuits which can even damage the equipment.

Equipment

- Only passive equipment that is in accordance with MITA's standard requirements shall be installed in the communications cabinet.
- Installation of equipment within all the MAGNET connected sites, shall be carried out after being authorised by MITA
- Maintenance shall be carried out by the client in accordance to the manufacturer's recommended service intervals and specifications
- Only authorized personnel shall carry out maintenance. MITA shall be notified beforehand when maintenance on LAN equipment shall be carried out
- Relocation of networking equipment shall be carried out only after proper authorization is sought from the management
- All the networking equipment which will be no longer be used within the LAN, shall have its configuration cleared
- No 3rd party networking equipment shall be connected to the MAGNET LAN without MITA's appropriate evaluation and consent
- When telecommunications equipment such as PABX and CCTV are intended to be installed in the same data communications cabinet, it is envisaged that a prior approval is sought from MITA. The request for approval shall be logged through the Agent's Service Call Centre and are subject to the following control
    - Segregation of Network – separate Virtual LAN
- No other internet connections other than those provided by MITA shall be installed within the cabinets used to house the networking equipment
    - On specific circumstances, MITA shall be consulted to evaluate on a case by case basis and decide accordingly

Cable Management

Where a cable management system is present inside a telecommunications cabinet, this should be used to organize cabling. The cable management system will help maintain neatness in the installation of patch panel cables and minimizes cable tangling inside the telecommunications cabinet.

Physical Access

- Telecommunication cabinets shall provide physical security protection to the networking equipment during and outside office hours.
- The keys to all telecommunication cabinets shall be kept by the Chief Information Officer or a delegate responsible for the site. Access to these areas shall be strictly to authorized personnel on a need to know basis.
- Telecommunication cabinet keys should not be left hanging in cabinet locks and shall be stored in a safe place and make sure that they are accessible at all times to authorized personnel
    - A list of all authorized personnel who shall have access to the cabinets shall be produced and followed accordingly
- Unsupervised access to the telecommunications areas shall be avoided both for health and safety reasons and to prevent opportunities for malicious activities
- The Chief Information Officer or delegate responsible for the site shall keep a log of access to the location of the network cabinet. Any changes/modifications carried out inside the telecommunications cabinet are to be recorded accordingly

Cable Installation Practices

This section shall provide a general guideline onto how to install and place trunking and network outlets effectively. This is to ensure that all specific areas within a building are well fed with networking passive hardware in order to facilitate scalability for future expansion requirements.

Trunking installation practices

All the major UTP cable routes shall be housed in 100mmx50mm PVC trunking. Entrance into rooms and its subsequent drop shall also be of this type of trunking.

Trunking installation practices

It is recommended to use 100mmx500mm trunking throughout the perimeter of the room to ensure scalability and to allow the addition of network outlets whenever the need for LAN extensions arises. For ease of reference, refer to figure 3.

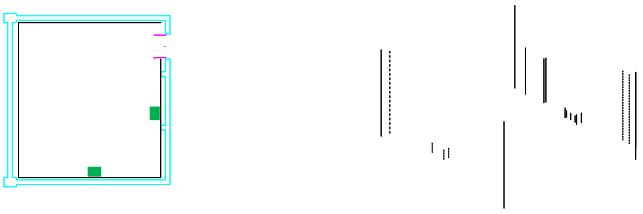


Figure 3 - Trunking around all the perimeter of the room

Back to back network outlets

In the case where network outlets are installed in different rooms but on adjacent walls, 100mmx50mm PVC trunking should be used and the wall outlet / outlets fixed via 3"x3" flush-mount boxes. If the amount of cables does not exceed the limit that can fit in 100mmx50mm trunking, one entry point into one room shall be used – this would reduce the number of entry points and successively of risers. Refer to figure 4.

It is important to note that all trunking risers shall be of 100mmx50mm in size to allow for future scalability of the network without the need of having to remove all the existent horizontal cabling to change to a larger trunking.

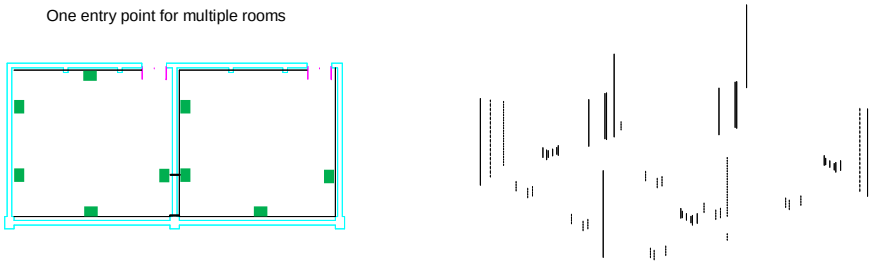


Figure 4 - 100mmx50mm trunking in adjacent rooms

Proposed new cabinet layouts

Example:

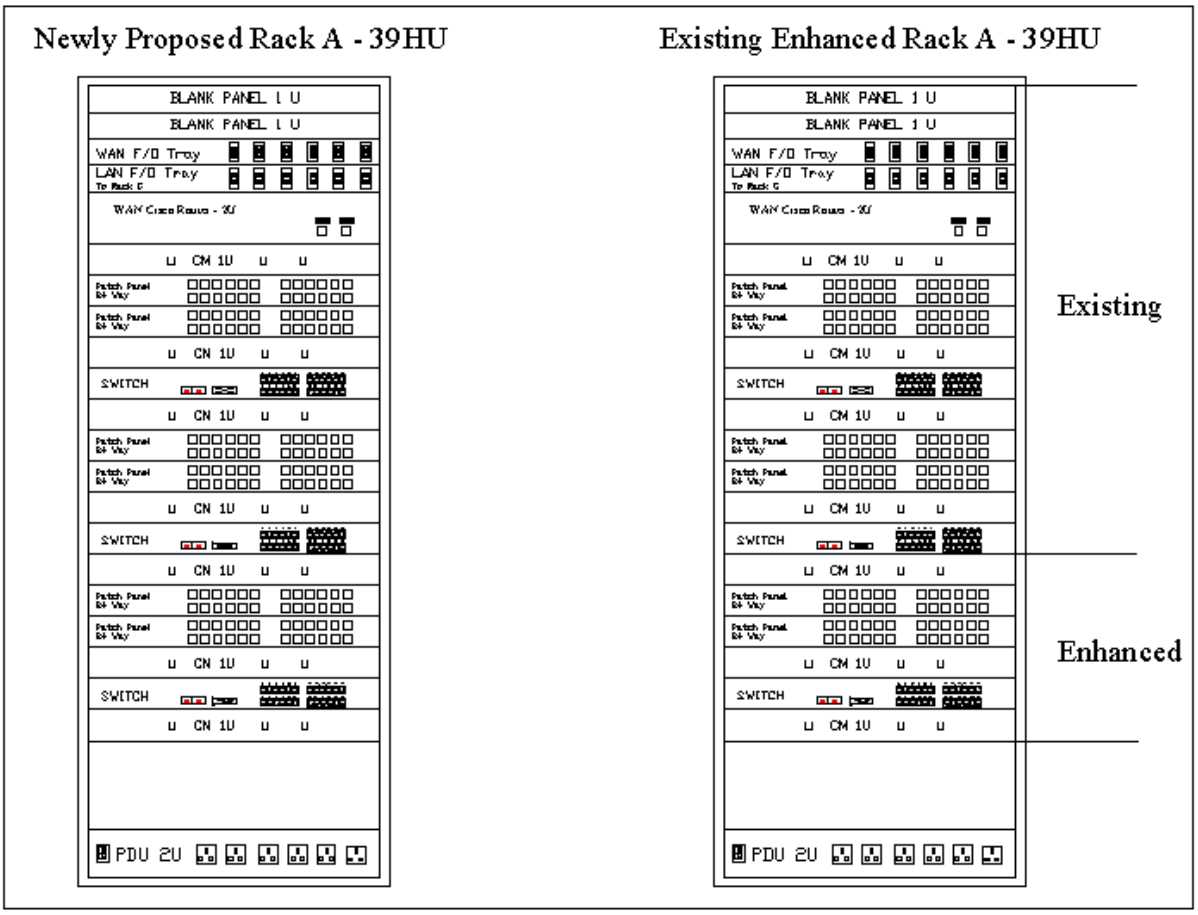


Figure 5 - Networking cabinets' physical layout

Network Backbones

The backbone cabling should support different bandwidth requirements within both the local area network.

Fibre Optic

Fibre backbone cabling can be installed in shafts or outdoors wherever the amount of 90m distance will be exceeded.

Outdoor fibre runs must be laid in fibre protection pipes and must be rodent proof. Inspection boxes should also be made available, at specific intervals along the route.

Copper Cable

Cat 5e UTP Cabling may be used for indoor Backbone cabling, but should be limited to a total of 90m. The 90m distance allows for an additional 5m at each end for equipment cables connecting to the backbone.

A minimum of 4 twisted pair cables, shielded or unshielded shall be installed for redundancy and bandwidth requirements.

Splice trays shall be sealed after installation for protection against rodents.

Cabling Security

- Power and data cables shall be separated from each other to prevent interference (refer to Appendix A section 8.1.1
- Try to prevent routes through public areas, like corridors and reception areas whenever possible
- All network cables shall be installed within trunking and not left hanging around unprotected/uncovered
    - This will also help in reducing the possibility of unauthorized interception or damage
- Proper cable labelling shall be used to avoid accidental or unwanted network patching
- Colour coded patch leads should be used to clearly identify different information services such as, but not limited to:
    - VoIP phones
    - PCs
    - CCTV cameras
    - Biometric devices
- When laying cables underground, it is recommended that:
    - Trenching works are carried out on solid grounds such as Tarmac or concrete surfaces
    - Cables are laid in a depth of no less than 350mm
    - Where ducts cannot be used but instead the cable shall be aerial laid, fibre optic shall be used
        - Proper structures shall be used
        - Fibre optic cable shall be supported by a steel cable

Cable Termination Quality

- Ethernet cables must be terminated according to the T568B wire pair standard.
    - In this regard, all patch panels and network outlets must be mapped with the T568B standard
    - No more than 1½" (3.8cm) of sheathing (jacket) shall be removed for terminating a network outlet
    - Maintain the twists of the pairs as close as possible to the point of termination or no more than ½" (1.27cm) untwisted.
- It is a good practice to leave a cable slag of approximately 9 inches on a terminated network outlet to allow eventual outlet replacement.
- When terminating patch panels, no jacks (110 IDC Terminals) shall be left unterminated unless these are labelled accordingly and agreed upon during the project requirements (PRE QA)
- A suitable insertion tool must be used to ensure full cable penetration in the jacks and so as not to leave excess cabling at the termination point.

Labelling

Each cabinet, patch panel and wall port shall be labelled by following the guidelines of the below sections.

Labelling Scheme for cabinets

The cabinet ID shall consist of one letter and increments as per number of cabinets. A sample cabinet administration scheme would be:

- Cabinet 1 – A
- Cabinet 2 – B

- Cabinet 3 – C

Labelling Scheme for Patch Panels

The identification scheme for patch panels should include cabinet ID and followed by one or more numbers. The number portion of the ID will include leading 0's. A sample patch panel administration schema would be:

- Patch Panel 1 in Rack A – A001, A002, A003, etc
- Patch Panel 2 in Rack A – A025, A026, A027, etc
- Patch Panel 1 in Rack B – B001, B002, B003, etc
- Patch Panel 2 in Rack B – B025, B026, B027, etc

Labelling Scheme for Wall Ports

The identification scheme for wall ports should have the same labelling number that corresponds to the other end of the patch panel.

The wallports shall be labelled in accordance to the networking cabinet in which it is terminated. For instance, if this cabinet is labelled as A, the wallport label shall be A followed by a 3-digit number, example:

- Wallport 1 terminated in Rack A – A001
- Wallport 2 terminated in Rack A – A002
- Wallport 100 terminated in Rack A – A100

- Wallport 1 terminated in Rack B – B001
- Wallport 2 terminated in Rack B – B002
- Wallport 100 terminated in Rack B – B100

Labelling Scheme for Ethernet Backbone Cabling

The identification scheme for Ethernet Backbone labelling should include the following pattern. From source cabinet ID to destination cabinet ID. The number portion of the ID will include leading 0's. A sample backbone administration schema would be: Refer to diagram 6 below.

Source Cabinet ID	Destination Cabinet ID	Number
A	B	01
A	B	02
B	A	01
B	A	02

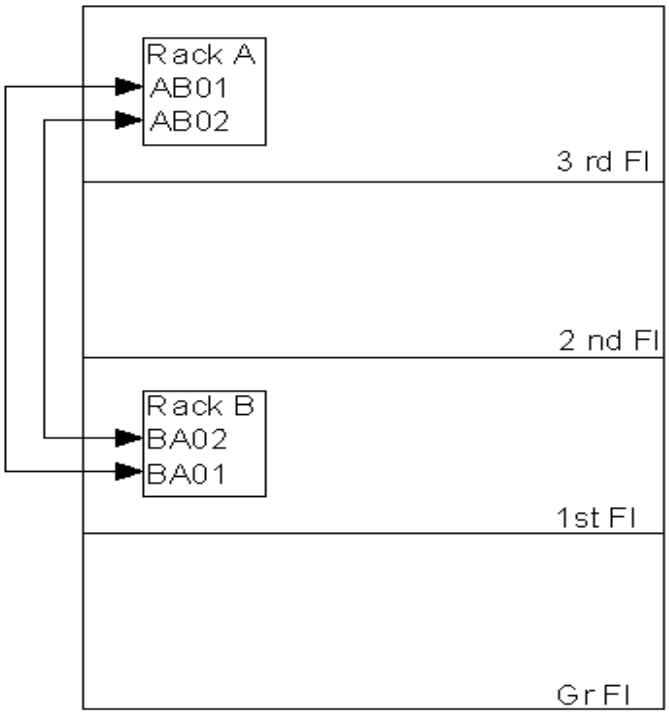


Figure 6 - Labelling scheme for Ethernet backbones

Labelling Scheme for Fibre Optic Backbone Cabling

The identification scheme for Fibre Optic Backbone labelling should abide with the below diagram. One should label the tray with the destination cabinet ID and the media type installed. A sample backbone administration schema would be: Refer to diagram 7 below.

Number of Pairs	Destination Cabinet ID	Media type
1 to 4	B	50/125µm
5 to 8	C	50/125µm

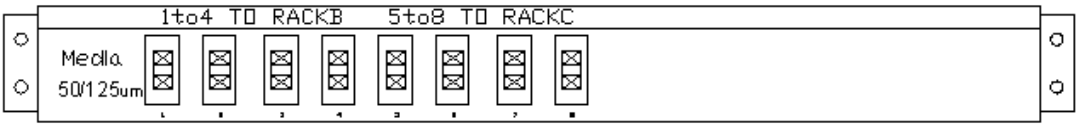


Figure 7 - Fibre patch panel labelling scheme for fibre optic backbones

Laying of cable – Installation practices

It is very important to establish the environmental conditions within the routes and to determine whether the installation methods that will be used are suitable for the cable to be installed.

A site survey and analysis of the available site documentation such as site plans, floor plans, is fundamental when installing a structured cabling system.

It is also very important to review all the possible routes, to check for problem areas such as bends, sharp corners, cutting edges that might damage the cable.

Cables in ceiling spaces: - Individual outlet cable shall be tied to ceiling suspension rods or cable trays or preferably in trunking and not just draped across ceiling.

Cables surface run: - Enclose in clip-on cover rectangular ducting of dimensions adequate to meet specified immediate and future requirements. The ducting shall be firmly fixed to walls with screws every 50cm in a zigzag pattern.

Ducts shall be used where the cable is buried and ground conditions shall be given careful consideration. It is recommended that the depth of the duct shall be more than 350mm. When the cable is going to be passed in a duct, it is better to use conduit for further protection.

Before pulling the cable, it is important to ensure that these are labelled at both ends. When pulling the cables special attention shall be paid. It is important to start with the longest cables. Do not try to pull too long lengths in one haul; the cable may be over stressed because friction builds up with length. Also, when pulling the cable, the minimum bending radius and the maximum pulling forces of the twisted pair cable shall be given due consideration.

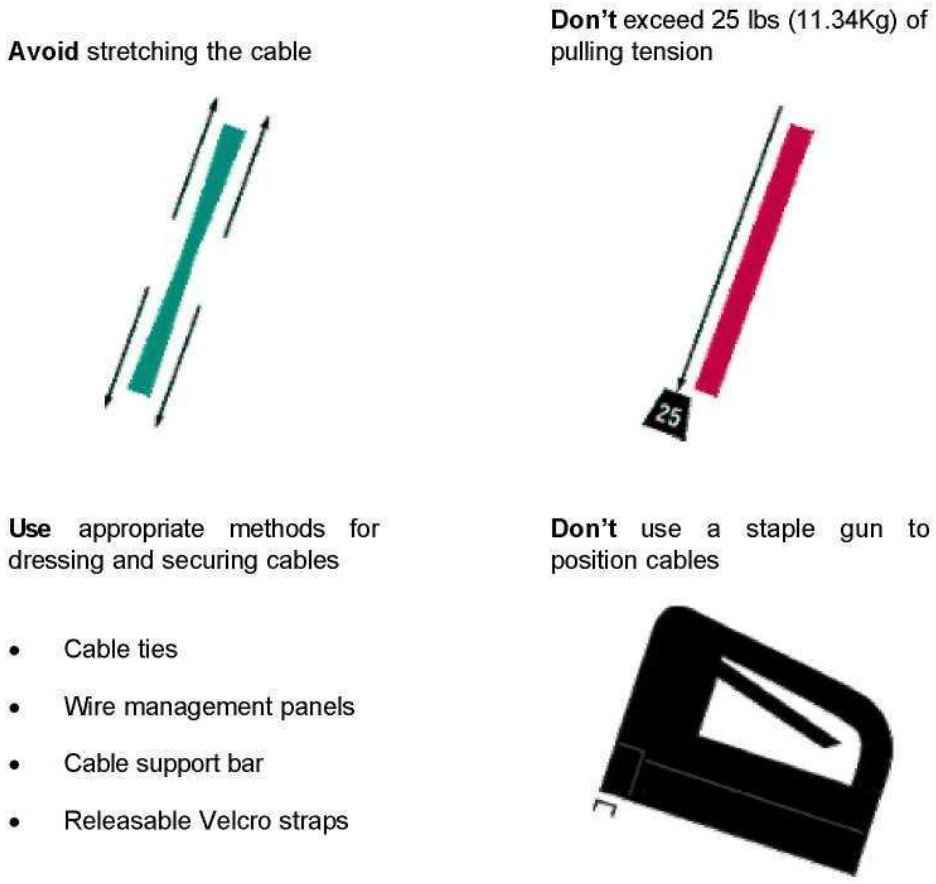


Figure 8 - Wire installation best practices

Laying of cable – Interference avoidance, Earthing and Grounding

During installation, a twisted pair cable shall be separated from electrical power wiring by one of following options:

1. either by placing the cables in separate trunking installed at no less than the values indicated in table 1 below
2. use specialized trunking which allows the separation of power from data cables and that prevents interference to data.

With respect to horizontal cabling, the minimum separation distance from power cabling within the same containment and other type of power source shall be maintained in accordance with table 1 below.

Cable Type	Distance Without Divider or Non Metallic Divider
Unscreened Power and UTP	30cm
Unscreened Power and FTP	5cm
Screened Power and UTP	3cm
Screened Power and FTP	0cm
Other Power Source	**Distance**
Fluorescent Lighting	30.5cm
Transformers and Electric Motors	1.02m

Figure 9 – Power and data cabling characteristics

When the network paths are likely to interfere with voltages and/or high frequency transmitting equipment, an STP/FTP/SSTP cable needs to be used. In this type of installation, ground connection is necessary, as it aims to avoid voltages between the screen and other metallic parts.

All earth connections both from patch panels and from the cabinet shall be connected to the earth key. By isolating the earth key from the frame of the cabinet it is possible to disconnect the earthing system from the ground formed by the metallic parts inside the cabinet. This makes it possible to detect potential problems on the earthing network.

To avoid voltages between the cabinet and other metallic parts, a connection is required to the protective earth. The earth conductor has to be connected to the earth key at a point of the protective earth in the neighbourhood of the cabinet. Where a protective system exists, the dimension of the earth conductor shall be 6mm² when the conductor is protected against corrosion and 10mm² when the conductor is not protected against corrosion

If no or only poor protective earth system is present in the building, a signal ground is required. When a new earthing installation is going to be installed, the dimensions of the earth conductor shall be 16mm² when the conductor is protected against corrosion, and 25mm² when the conductor is not protected against corrosion.

Terminations

To meet category 6 standards, all cable connections are allowed a maximum of 13 mm (0.5 in) of untwisted conductors at the point of termination.

Screw type terminations shall not be used. Clip or barrel IDC (insulation displacement contact) connections such as those used in IDC blocks shall be used.

Due attention shall be given to termination practices. A tight wire twist up to the point of termination at punch blocks, wire plates, and connectors shall be maintained.

Instructions to terminate a patch panel

1. Remove 7cm of sheathing from the cable.
2. Using the colour-coded notches spread apart the orange pair using the orange nub with the white/orange wire towards the blue notch. Push in the wire as firmly as possible. Remember to keep the distance less than 2.54cm (1 inch) from the edge of the cable sheathing to where the cable is terminated and cut so that interference is kept to a bare minimum. Anything over the 2.54 cm mark would make the wire pairs more prone to noise and interference
3. Install the other 3 pairs in the cable the same way with the whites of each pair always toward the blue end of the split 110 (termination jacket)
4. Using the punch down tool, slide the blade into each notch and push