

REASONED LETTER OF OBJECTION

To: The Secretary
Public Contracts Review Board (PCRB)
Notre Dame Ditch
Floriana, Malta

Date: 9 November 2026

Subject: FORMAL OBJECTION AGAINST TECHNICAL DISQUALIFICATION – TENDER CT3029/2026 – TID 247178

Tender: Proposed Construction of a Bird Observatory Including the Formation of Three Brackish Water Ponds for Wader Species at Għadira s-Safra

Objector: LBA Ltd

Tender Identification Number: 247178

Contracting Authority: Department of Contracts / Ambjent Malta

Decision under Challenge: Technical non-compliance decision communicated on 30 October 2026 in respect of TID 247178, and the consequential proposed award in favour of Richard Muscat, TID 247400.

Dear Sir/Madam,

1. Introduction

LBA Ltd (hereinafter referred to as the "Objector") hereby formally lodges this Reasoned Letter of Objection pursuant to Regulation 270 and the applicable provisions of the Public Procurement Regulations (S.L. 601.03), challenging the decision communicated by the Department of Contracts on 30 October 2026, whereby its tender submission bearing **TID 247178** was declared technically non-compliant.

For the avoidance of doubt, the present objection relates exclusively to Tender Identification Number 247178.

The Objector respectfully contests the decision to disqualify its tender on the sole stated ground that sketches relating to the proposed accommodation for the Supervisor were not included in the Technical Offer.

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e-mail: info.lbamalta@gmail.com

VAT N°: 25772106

The Objector submits that the decision warrants reconsideration having regard to:

- The substantive technical information actually submitted as part of the original Technical Offer.
- The purpose and intended function of the relevant tender requirement.
- Prudent construction-site planning and management considerations.
- The distinction between clarification and rectification expressly contemplated under Note 3 of the tender documentation.
- The principles of proportionality, equal treatment, transparency and effective competition governing public procurement procedures.

2. Factual Background

The tender documentation required economic operators to provide information concerning the proposed accommodation and facilities intended for the Supervisor.

In particular, Item (e) of the Tenderer's Technical Offer stipulated:

"Accommodation for the Supervisor - The economic operator is to provide sketches and data detailing the characteristics of the accommodation and facilities intended to be provided."

In response to this requirement, LBA Ltd prepared and duly submitted, as an integral part of its original Technical Offer, a dedicated document entitled "Proposed Accommodation and Facilities for the Supervisor".

The said document contained a detailed written description of the proposed accommodation arrangements and associated facilities, including:

- A clean, secure and suitable working area located within, or immediately adjoining, the Contractor's site office.
- A dedicated workstation and access to appropriate meeting facilities.
- Adequate lighting, ventilation, weather protection and electrical supply.
- Internet connectivity, telephone communications, printing facilities and access to project documentation.
- Secure storage facilities for drawings, instructions and other project records.
- Access to appropriate sanitary and welfare facilities.
- Safe access arrangements for the Supervisor and other duly authorised representatives.
- The maintenance and continued availability of such facilities throughout the execution of the Works.

Furthermore, the document contained an express undertaking by LBA Ltd to provide and maintain the aforementioned facilities as part of its contractual obligations.

Accordingly, the Objector had provided substantive technical information identifying the nature, intended purpose and principal characteristics of the proposed accommodation and associated facilities.

The Objector acknowledges that separate graphical sketches and site-layout drawings were not included in the submitted Technical Offer.

Nevertheless, it respectfully submits that this omission should be assessed in the context of the technical information already provided, the purpose of the requirement and the operational considerations underlying the decision not to determine the precise location of the accommodation at that preliminary stage.

3. First Ground of Objection – Intended Determination of the Exact Location in Consultation with the Site Manager

The Objector wishes to clarify a fundamental consideration underlying the preparation of its Technical Offer.

It was the deliberate intention of LBA Ltd to verify and agree upon the precise location of the Supervisor's accommodation in consultation with the Site Manager during the site mobilisation and establishment stage, having due regard to the actual operational conditions, logistical arrangements and applicable health and safety requirements.

Such an approach was adopted as a matter of prudent construction planning and was consistent with the practical need to coordinate the various activities and temporary facilities within the construction site.

Given the characteristics of the proposed Works and the environmentally sensitive nature of the Għadira s-Safra area, LBA Ltd considered it appropriate that the definitive positioning of the accommodation should be assessed jointly with the Site Manager, within the framework of the detailed site-establishment arrangements and subject to the applicable requirements and directions of the Supervisor.

The Objector's intention was therefore not to omit or disregard the accommodation requirement, but rather to avoid prematurely committing to a definitive location before the necessary assessment of the site's actual logistical, operational, safety and environmental conditions.

Importantly, this approach was expressly reflected in the Technical Offer originally submitted.

The introductory section of the document entitled "Proposed Accommodation and Facilities for the Supervisor" stated that the proposed arrangements were preliminary and would be finalised following the award, taking into account the approved site set-up, the available working area, health and safety requirements and the reasonable instructions of the Supervisor.

The original submission therefore expressly disclosed the preliminary nature of the proposed arrangements and the intention to finalise their implementation through the appropriate site-planning and coordination process.

The Objector acknowledges that the intention to determine the definitive location at a later stage does not, in itself, dispense with an express tender-stage requirement to submit indicative sketches.

Nevertheless, it respectfully submits that the technical and operational rationale underlying this approach should be duly considered when assessing the nature and materiality of the omission.

LBA Ltd did not intend to evade any contractual obligation. Its objective was to ensure that the final accommodation arrangements would be properly coordinated, functional, safe and compatible with the actual conditions prevailing on site.

4. Second Ground of Objection – Failure to Give Adequate Consideration to the Substantive Technical Information Submitted

The Objector respectfully submits that its Technical Offer was not devoid of information concerning the proposed accommodation and facilities for the Supervisor.

On the contrary, a specific and dedicated section was prepared for the express purpose of addressing this requirement.

The documentation submitted described the proposed accommodation, its facilities, equipment, services, access arrangements and the contractual commitments undertaken by the Contractor.

The Tender Evaluation Committee was therefore in possession of substantive information enabling it to assess a significant part of the proposed accommodation arrangements.

The absence of a separate graphical representation did not mean that no accommodation had been proposed, nor that LBA Ltd had failed to undertake to provide the necessary facilities.

The Objector therefore respectfully requests that consideration be given to whether adequate weight was afforded to the substantive information and contractual commitments already contained within the original Technical Offer.

In particular, a distinction should be drawn between the absence of a preliminary graphical illustration and the complete absence of a technical proposal concerning the required facilities.

In the present case, the relevant facilities had been described and the corresponding contractual commitments had been expressly undertaken.

5. Third Ground of Objection – Principle of Proportionality

The Objector respectfully submits that the decision to disqualify its tender should be examined in light of the principle of proportionality.

The underlying purpose of requiring information concerning the Supervisor's accommodation is understood to be ensuring that suitable facilities will be available for the proper supervision, inspection and administration of the Works.

LBA Ltd had expressly undertaken to provide such facilities and had described their principal characteristics and intended functions.

The Objector therefore submits that consideration ought to have been given to whether the absence of a preliminary illustrative sketch constituted a deficiency of such substantive significance as to justify the outright disqualification of the tender, having regard to the technical information already supplied.

In this regard, reference is made to the judgment delivered by the Maltese Court of Appeal on 29 January 2026 in the case of *Europharma Limited v. Central Procurement and Supplies Unit et al.* (Civil Appeal No. 445/2025/1), wherein the Court considered the principles of proportionality and the distinction between formal irregularities and substantive deficiencies in public procurement submissions.

The Objector acknowledges that the factual circumstances of that case were different, particularly insofar as the relevant information was already available elsewhere within the original tender submission.

Nevertheless, the Objector respectfully relies upon the general principle that the assessment of an irregularity should take account of its actual nature and consequences, whilst safeguarding equal treatment and transparency.

In the present circumstances, the Objector respectfully requests the Board to consider whether the absence of a preliminary graphical illustration necessarily rendered the proposed accommodation incapable of technical assessment, notwithstanding the detailed written description and binding commitments already submitted.

6. Fourth Ground of Objection – Application of Note 3 and the Permissibility of Clarifications Relating to Information Already Submitted

The Objector expressly refers to Note 3 of the tender documentation, which provides:

"No rectifications shall be allowed. Only clarifications on the submitted information may be requested."

The said provision distinguishes between rectification, which is expressly prohibited in respect of Note 3 documentation, and clarification of information already submitted.

LBA Ltd fully acknowledges the principle that a tenderer may not materially amend or supplement its Technical Offer following the expiry of the prescribed submission deadline.

Nevertheless, the Objector respectfully submits that a specific question of interpretation arises in the present circumstances.

The original Technical Offer already contained a description of the proposed accommodation and its principal characteristics, together with an indication of its intended functional relationship with the Contractor's site office.

Although the precise position of the accommodation within the site had not been definitively identified, the proposed facilities, their intended functions and the relevant contractual commitments had already been described.

Against this background, the Objector respectfully submits, in the alternative, that consideration may be given to whether a purely illustrative sketch, limited strictly to depicting technical information already contained within the original submission, could properly be regarded as a clarification rather than an impermissible rectification.

Under such an interpretation, an explanatory sketch would serve solely to provide a graphical representation of the facilities and functional arrangements already described.

It would not be intended to introduce any new technical solution, additional facilities, revised specifications, altered contractual obligations or different financial commitments.

The Objector's position is that such a representation, if confined exclusively to information already disclosed, could potentially be distinguished from a substantive amendment to the Technical Offer.

The Objector nevertheless acknowledges that Note 3 prohibits the subsequent submission of mandatory technical documentation omitted at tender stage.

Accordingly, the Objector does not contend that it possesses an automatic entitlement to submit a new sketch after the tender deadline.

Rather, the Objector respectfully requests the Board to determine whether, in the particular circumstances of this case, a representation serving exclusively to explain information already supplied could lawfully fall within the scope of clarification contemplated under Note 3, or whether it must necessarily be classified as a prohibited rectification.

For the avoidance of doubt, the Objector does not seek to submit a revised Technical Offer, replace any originally proposed arrangement or introduce a new substantive element into its tender.

Its request concerns the interpretation and application of the clarification mechanism to the technical information already forming part of the original submission.

The Objector therefore respectfully requests that the applicability of the clarification provisions under Note 3 be considered in light of the particular nature and content of the documentation originally provided.

7. Fifth Ground of Objection – Adequacy of the Evaluation and Reasons for Disqualification

The rejection communication issued in respect of TID 247178 identifies the absence of sketches as the ground for technical non-compliance.

The Objector acknowledges that the Department of Contracts identified the missing sketches and referred to the applicable Note 3 requirement.

However, the communication does not indicate whether the Tender Evaluation Committee considered the extent to which the detailed written description already submitted addressed the operational and functional objectives underlying the Supervisor accommodation requirement.

Furthermore, the communication does not specifically address the fact that the original Technical Offer expressly contemplated finalising the accommodation arrangements as part of the subsequent site-establishment process.

The Objector therefore respectfully requests that the relevant evaluation records be examined in order to establish whether the disqualification decision was reached following adequate consideration of the original submission and the applicable tender conditions.

The Objector further requests that the evaluation process be reviewed in accordance with the principles of equal treatment, transparency and proportionality applicable to all participating economic operators.

8. Absence of Competitive Advantage

The Objector reiterates that its original Technical Offer already contained an express commitment to provide suitable accommodation and the necessary facilities for the Supervisor.

LBA Ltd does not seek to introduce an alternative technical solution, amend its tendered price or alter its contractual obligations.

Its position is that the written technical description and commitments already submitted should have been duly considered when determining the significance of the omitted graphical illustration.

The Objector further submits that any clarification strictly confined to the original information, if found legally permissible, should not involve any substantive amendment to the tender or confer an unfair competitive advantage over other participating tenderers.

The Objector accordingly requests the Board to consider whether maintaining the disqualification is necessary and proportionate in the particular circumstances of this case.

9. Remedies Sought

For the reasons set out above, LBA Ltd respectfully requests the Public Contracts Review Board to:

1. Uphold the present objection, should the Board determine that the technical disqualification was not justified under the applicable tender conditions and governing procurement principles.
2. Annul, revoke or otherwise set aside the decision communicated on 30 October 2026 whereby the Objector's tender submission bearing **TID 247178** was declared technically non-compliant.
3. Annul or suspend, insofar as legally appropriate, the consequential proposed award decision in favour of Richard Muscat, TID 247400.
4. Direct the competent Contracting Authority to carry out a fresh evaluation of the Technical Offer originally submitted by LBA Ltd under TID 247178, taking due account of the technical information and contractual commitments already contained therein.
5. In the alternative, and only insofar as legally permissible under Note 3 and the applicable procurement regulations, consider whether a clarification strictly limited to the graphical explanation of information already submitted may be admitted without materially altering the original Technical Offer.
6. Order, where necessary, the production and examination of the relevant technical evaluation records and supporting documentation.
7. Grant any further or other remedy, direction or order which the Board may deem appropriate and lawful in the circumstances.

8. Order the reimbursement of the administrative deposit, should the Board consider such reimbursement warranted under the applicable regulations.

10. Administrative Deposit and Supporting Documentation

The Objector hereby confirms that it has effected payment of the required administrative deposit in the amount of **€3,722.00 (three thousand seven hundred and twenty-two euro)** in connection with the lodging of the present objection concerning TID 247178.

The said payment was effected by bank transfer in accordance with the payment instructions and banking details communicated by the Department of Contracts in its letter dated 30 October 2026.

Documentary proof of the bank transfer is enclosed herewith as evidence of the payment effected.

The Objector respectfully requests that the said payment confirmation be duly received and placed on record as part of the present proceedings.

11. Conclusion

LBA Ltd reiterates that it prepared and submitted, in good faith, a dedicated technical document addressing the proposed accommodation and facilities intended for the Supervisor.

The absence of a site-layout drawing identifying the definitive location of the accommodation was directly connected to the Objector's intention to determine such location in consultation with the Site Manager during the site-establishment stage, thereby ensuring that the final arrangements would be functional, safe and compatible with the actual operational conditions.

The Objector does not dispute that separate graphical sketches were not included in its original submission.

It does, however, respectfully contest whether such omission, considered together with the detailed written description and contractual commitments already provided, necessarily justified the outright disqualification of its tender.

Furthermore, the Objector respectfully submits that consideration should be given to whether the clarification mechanism expressly contemplated under Note 3 could, within the limits permitted by law, apply to a purely explanatory graphical representation of information already contained within the original Technical Offer.

Accordingly, LBA Ltd respectfully requests the Public Contracts Review Board to examine the substantive contents of the original Technical Offer, the purpose of the relevant requirement, the operational considerations underlying the approach adopted by the Objector, and the proportionality of the disqualification decision.

The present objection is submitted in good faith and without prejudice to any rights, claims or remedies available to LBA Ltd under the applicable law.

Yours faithfully,

For and on behalf of LBA Ltd

Signature: _____
Daniel J Abela
Director

Signature: _____
Linda Renda
Director

Signature: _____
Stefan Said
Director

Date: 9 November 2026

List of Enclosures

1. Department of Contracts – Technical Non-Compliance Letter dated 30 October 2026 relating to **TID 247178**.
2. Original Tenderer's Technical Offer submitted under TID 247178, including the document entitled "Proposed Accommodation and Facilities for the Supervisor".
3. Tender Document CT3029/2026, with particular reference to Section 1, Article 5 and the Notes to Clause 5.
4. **Proof of bank transfer of €3,722.00 in respect of the administrative deposit required for the lodging of the present objection.**

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VAT N°: 25772106

Bank of Valletta p.l.c
Registration Number: C 2833
Registered Office: 58 Zachary Street, Valletta VLT 1130 - Malta

Pay third party

Printed by: Ms. LINDA RENDA
Printed on: 09/11/2026 - 10:48
Document ID: 30394281

Transaction details

Payer's name:	LBA LTD
Payee type:	Corporate Payee
Company name:	Cashier Malta Government
Relation:	Administrative Services
Reason:	Other
Payment details:	FORMAL OBJECTION AGAINST TECHNICAL DISQUALIFICATION CT3029/2026
Currency:	EUR - Euro
Beneficiary IBAN/Account:	MT55MALT011000040001EURCMG5001H
Beneficiary IBAN/Account type:	Valid IBAN of country - Malta
Bank name:	Other bank
Bank address / Bank's BIC:	Let the bank apply the beneficiary bank BIC
Beneficiary address:	No
From account:	5001727734 2 (EUR)
Charges should be paid by:	Shared - I pay BOV charges; beneficiary pays the beneficiary bank charges
Amount:	EUR 3,722.00
BOV to transfer the money:	as soon as possible
Receiving bank to get the money as:	Instant payment
FPAD Result:	We couldn't confirm that the name you entered matches the recipient's account. This might happen if the recipient's bank doesn't support name checks yet or if there's a temporary issue. Please double-check that the name and account details are correct before continuing. If any details are wrong, the payment could go to the wrong account or may be fraudulent and may not be recoverable. If you're confident everything is correct, you can go ahead and make the payment.
Saved template:	Cashier Malta Government

Additional information

Credit amount:	EUR 3,722.00
Debited amount (excluding charges):	EUR 3,722.00
Estimated amount to be withdrawn from account:	EUR 3,726.00
Transaction charge:	EUR 4.00

Transaction result

Status:	Your instructions have been processed successfully.
Transaction ID:	188394960

DIPARTIMENT TAL-KUNTRATTI
Notre Dame Ravelin
Floriana FRN 1601 – MALTA

DEPARTMENT OF CONTRACTS
Notre Dame Ravelin
Floriana FRN 1601 – MALTA
Contact Number: +356 2378 1001
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website: www.contracts.gov.mt

30th October 2026

LBA Ltd
TID 247178

REFERENCE: CT3029/2026

SUBJECT: TENDER FOR A PROPOSED CONSTRUCTION OF A BIRD OBSERVATORY INCLUDING THE FORMATION OF 3 NO. BRACKISH WATER PONDS FOR WADER SPECIES AT GHADIRA S-SAFRA

Dear Sir/Madam,

Thank you for participating in the above-mentioned tender procedure. However, I regret to inform you that the offer submitted by your company was found to be technically non-compliant as follows:

TID 247178:

"In accordance with Section 1, Article 5(c)(ii), the Technical Offer was required to include:

"Accommodation for the Supervisor - The economic operator is to provide sketches and data detailing the characteristics of the accommodation and facilities intended to be provided."

The bidder submitted a narrative description under the section entitled "Supervisor Accommodation & Facilities". However, no sketches, layout drawings or site-layout plans relating to the proposed supervisor accommodation were included in the submission reviewed.

Accordingly, the requirement for the submission of sketches relating to the proposed accommodation for the Supervisor was not satisfied. This requirement forms part of the Technical Offer and is designated as Note 3 documentation."

DIPARTIMENT TAL-KUNTRATTI
Notre Dame Ravelin
Floriana FRN 1601 – MALTA

DEPARTMENT OF CONTRACTS
Notre Dame Ravelin
Floriana FRN 1601 – MALTA

Contact Number: +356 2378 1001
e-Mail: info.contracts@gov.mt
website: www.contracts.gov.mt

The tender was recommended for award to **TID 247400 Richard Muscat for the amount of €638,053.36 excluding VAT**, this being the cheapest priced tender satisfying the administrative and technical criteria.

If you intend to object to this decision, the Public Procurement Regulations allow for an official objection which in this case has to be lodged electronically with the Public Contracts Review Board by sending an email on: *info.pcrb@gov.mt* **by noon of Monday 09th November 2026 against a deposit of €3,722.00.**

Payments are to be made through bank transfer in terms of the following details:

Name of Account Holder	Cashier Malta Government
Name of Bank	Central Bank of Malta
Address of Bank	Castille Place, Valletta
Account Number	40001EUR-CMG5-001-H
BIC	MALT MT MT
IBAN Code	MT55MALT011000040001EURCMG5001H
Bank Code	01100

The official schedule can be accessed on the website: *www.etenders.gov.mt*.

Although we have not been able to make use of your services on this occasion, I trust that you will continue to take an active interest in our initiatives.

Yours sincerely,

Adrian Dalli

Director General (Contracts)

GOVERNMENT OF MALTA

etenders.gov.mt

FONDI.eu

REFERENCE NUMBER: CT3039/2026

WORKS
TENDER FOR A PROPOSED CONSTRUCTION OF A BIRD OBSERVATORY INCLUDING THE FORMATION OF 3 NO. BRACKISH WATER PONDS FOR WADER SPECIES AT GHADIRA S-SAFRA

This project is being financed through EU funds.

Co-funded by the European Union

Department of Contracts
Notre Dame Ravelin, Floriana FRN1601
Tel: (356) 21220212. Fax: (356) 21247681 Email: info.contracts@gov.mt

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SECTION 1 - INSTRUCTIONS TO TENDERERS

1. General Provisions

1.1 The subject of this tender is the proposed construction of a bird observatory including the formation of 3 no. brackish water ponds for wader species as per approved development planning permit No.PA/01446/21. The contractor shall be required to fully comply with the permit conditions and its approved plans. This project is in connection with E-CORE co-financed by the European Union.

1.2 The place of acceptance of the works shall be at Għadira s-Safra, Maghtab L/O Naxxar, the time-limits for the execution of the contract shall be forty-five 45 weeks from the order to start works, and the INCOTERM[2020] applicable shall be **Delivery Duty Paid (DDP).**

1.3 The Estimated Procurement Value for this Call for Tenders has been based on comprehensive research including appropriate financial analysis. In the context of this procurement, the Estimated Procurement Value, based on market research, is that of €744,411 excluding VAT.

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

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

1.4 The final beneficiary of this tender is Ambjent Malta.

2. Timetable

The timetable is as per the dates set through the CfT workspace on the ePPS.

	DATE	TIME*
Clarification Meeting/Site Visit	3rd July 2026	10:00am
Deadline for request for any additional information from the Contracting Authority. **Clarifications by registered users to be sent online through www.etenders.gov.mt**	10th July 2026	09:30am
Last date on which additional information can be issued by the Contracting Authority	15th July 2026	09:30am
Deadline for Submission of Tenders (unless otherwise modified in terms of Clause 10.1 of the General Rules Governing Tendering)	27th July 2026	09:30am
Tender Opening Session (unless otherwise modified in terms of Clause 10.1 of the General Rules Governing Tendering)	27th July 2026	10:30am

* All times Central European Time (CET)/Central European Summer Time (CEST) as applicable

3. Lots

3.1 This tender is not divided into lots, and tenders must be for the whole of quantities indicated. The tender cannot be divided into lots since all works are interrelated and cannot be physically separated in view of the complex and overlapping nature of the works and installations involved. Tenders will not be accepted for incomplete quantities.

4. Clarification Meeting/Site Visit/Workshop

4.1 A clarification meeting/site visit will be held on **[Friday 3rd July 2026 at 10:00am]**, at **Ghadira s-Safra Parking Area** to answer any questions on the tender document which have been forwarded in writing or are raised during the same meeting. Minutes will be taken during the meeting, and these (together with any clarifications in response to written requests which are not addressed during the meeting) shall be posted online as a clarification note as per Clause 6.1 of the General Rules Governing Tendering.

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

5. Selection and Award Requirements

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

(A) Eligibility Criteria
Economic Operators are to complete the Eligibility Section through the tender response format (Note 2)

If applicable, the necessary forms - such as the Power of Attorney, are to be uploaded through the tender response format/ePPS/xml structure by the Economic Operator, as indicated in the relevant fields of the tender structure.

In line with the Construction Industry Licensing Regulations S.L. 623.09 including the amendments ensued via Legal Notices 36 of 2024 and 127 of 2024, Contracts Circular 17/2023 and Contracts Circular 19/2023, Economic Operators shall submit documentation (Note 2) relating to the Service Activity License Application for [(a) Excavation; and (b) Construction] as detailed hereunder.

Economic Operators who applied for the respective Service Activity License/s by the 31st October 2023 and whose application is still being reviewed by the Competent Authority in line with S.L. 623.09, have to submit the Acknowledgement Document of Application Submission which shall indicate at least the: (i) Building and Construction Authority Email Address originating from the System, (ii) Submission Date, (iii) Unique Reference Number which includes the Service Activity License Type, (iv) Identification of the Applicant. (Note 2)

Economic Operators who applied for the respective Service Activity License/s as of 1st November 2023 shall submit a Copy of the Provisional Clearance issued by the Competent Authority, namely the Construction Industry Licensing Committee, to continue operating the relevant Service Activity [in line with Regulation 3(5) of S.L. 623.09]. (Note 2)

In the eventuality that Economic Operators would already be in receipt of the Service Activity License/s, it is expected that the relevant Economic Operators submit the license Certificate/s in lieu of any other documentation. (Note 2)

S.L. 623.09 defines the Provisional Clearance as 'a clearance issued by the Authority with respect to applications for license, which clearance shall temporarily authorise the applicant to exercise any of the service activities in respect of which the application relates pending the determination of the application'.

(B) Exclusion (including Blacklisting) and Selection Criteria - information to be submitted through the European Single Procurement Document (ESPD) in the tender response format (Note 2)

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

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

Kindly note that the ESPD tender response format is pre-populated by the system. It is the Economic Operator's responsibility to ensure that the correct information is reflected in the ESPD tender response format for the above criteria.

Selection Criteria requirements are to be completed by the Economic Operator in the ESPD (Tender response format) under Part IV titled 'Selection Criteria' which includes the following: (Note 2)

(a) **Suitability** (Note 2)
Not applicable.

(b) **Economic and Financial Standing** (Note 2)
Not applicable.

(c) **Technical and Professional Ability** (Note 2)

Subcontracting Proportion

Provide data concerning subcontractors and the percentage of works to be subcontracted. This information shall be included in the online ESPD form in Part IV: Selection criteria - Technical and professional ability.

Any subcontractor proposed and disclosed shall be evaluated in line with the Exclusion and Blacklisting Criteria as per these Instructions to Tenderers.

Furthermore, if the sub-contractor is relied upon by the Contractor to meet the standards established in the selection criteria, apart from submitting the relevant commitments in writing, such reliance will be evaluated to verify its correctness and whether in effect these criteria are satisfied.

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

(d) **Quality Assurance Schemes and Environmental Management Standards** (Note 2)
Not applicable.

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

(C) Specifications

(i) Tenderer's Technical Offer in response to specifications to be submitted online through the prescribed Tender Response Format and by using the Tender Preparation Tool provided. (Note 3)

Key Experts Form, the Statement of Availability Form, the Self-declaration form for Key Experts (relating to public employees) and CVs (Note 2)

Key Expert No. 1 - A warranted Architect and Civil Engineer (Perit) / Project Manager

This key expert shall be a warranted Perit as defined by the Perit applicable to citizens of Malta or of a member state otherwise allowed to work in Malta under any other Law, in terms of CAP. 390 and CAP. 622 (Periti Act as amended) of the Laws of Malta who shall be serving as well as a Project Manager.

The warranted Perit in Key Expert No. 1 shall be required to sign and submit the Change of Architect form to the Planning Authority (if available) within two weeks from the tender award, and to take thereon the direction and full responsibility of the works.

Key Expert No. 2 - A Site Technical Officer during Demolition and Construction (unless an exemption is obtained before commencement of works from the BCA).

Site Technical Officer 'Perit' as per Chapter 390 and CAP. 622 Periti Act, holding a valid warrant issued by the Periti Warrants Board enabling him/her to practice locally or in possession of a MQF level 6 (or equivalent) in Engineering and who must conform with the requirements of Subsidiary Legislation 623.06 Avoidance of Damage to Third Party Property Regulations under Chapter 623 Building and Construction Authority Act. He/She will carry out the duty or duties derived from the provisions of these regulations.

Key Expert No 1 and Key Expert No. 2 may be the same person, provided that all the qualifications and skills for the said positions are met by this same person.

Key Expert No.3 - A Project Supervisor for Occupational Health and Safety

A project Supervisor for OH & S registered in the list of competent persons as published by the Health and Safety Authority, to ensure compliance with Legal Notice 88/2018 Occupational Health and Safety Authority Act (CAP.424) Workplace (Minimum Health and Safety Requirements for Works at Construction Sites) Regulations 2018.

Tenderer's Technical Offer (Note 3)

(ii)

(D) Financial Offer

(i) A financial offer calculated on the basis of **Delivered Duty Paid (DDP) (Grand Total)** for the works tendered as per Tender Response Format.(Note 3)

(ii) A filled-in Bill of Quantities as per Tender Response Format. (Note 3)

In case of any discrepancy between what the bidder inputs as a total in the respective space directly in the .xml tender structure (and reflected in the Opening of Offers Schedule) and what the bidder uploads as a document where requested in the Financial Section of the ePPS, the total in the .xml shall prevail for global-priced/lump sum financial offers.

On the other hand, where the financial offers to be uploaded constitute a Bill of Quantities (BoQ) or financial bid forms which contain rates/quantities/total prices broken down where the total can be arithmetically worked out and/or corrected, the total financial values worked out within the uploaded document in the Financial Section of the ePPS will prevail.

Notes to Clause 5:

1. Tenderers will be requested to clarify/rectify, within five (5) working days from notification, the tender guarantee only in the following four circumstances: incorrect validity date, and/or incorrect value, and/or incorrect addressee and incorrect name of the bidder. Rectification in respect of the Tender Guarantee (Bid Bond) is free of charge. (currently Bid Bonds are not applicable)

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

3. No rectifications shall be allowed. Only clarifications on the submitted information may be requested. Tenderers will be requested to clarify the submitted information within five (5) working days from notification.

Requests for Clarifications and/or Rectifications concerning a previous request dealing with the same shortcoming shall not be entertained.

6. Criteria for Award

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

SECTION 2 - SPECIAL CONDITIONS

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

Article 2: Law and language of the Contract

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

2.2 The language used shall be English.

Article 3: Order of Precedence of Contract Documents

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

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

Addenda have (including clarifications/rectifications at evaluation stage) the order of precedence of the document they are modifying.

Article 4: Communications

4.1 Ambjent Malta Head Office
Premiere Business Centre
Constitution Street
Mosta, Malta

Tel: 23316400
E-mail: procurement.ambjentmalta.meec@gov.mt

Article 5: Supervisor and Supervisor's Representative

5.1 Further to the General Conditions, the names of the Contracting Authority appointed Project Manager (Supervisor) and of his representatives shall be notified to the appointed Contractor together with the Order to Start Works.

5.8 The Contractor's nominated representative shall receive, on behalf of the Contractor, instructions related to any part of the works. These instructions shall be deemed to have been given to the Contractor and therefore will be immediately acted upon.

5.9 Supervisor shall oversee the execution of the Works on behalf of the Contracting Authority with particular regard to the General Conditions and the Special Conditions of the Contract, the Progress of the Works, Compliance with the Specifications and Drawings and the quality of workmanship.

In the event that the Supervisor becomes aware that the Works are not being executed in accordance with the Contract including any and all conditions or requirements thereof, the Supervisor shall have the authority to give such instructions as he may deem necessary to the Contractor and the Contractor shall comply forthwith.

Provided that whether or not such instructions are issued the responsibility for ensuring that the works are executed in accordance with any and all requirements and conditions of the Contract shall lie solely with the Contractor.

5.10 The Supervisor and/or the Supervisor's Representative shall have the power, during the course of the Works, to order the Contractor to remove from the Site any work or materials that are deemed to be of an inferior quality or defective in any way. He shall also have the power to order the removal and the replacement and/or proper re-execution of the work or materials in question. Such replacement or re-execution shall be carried out by the Contractor at his own expense.

In the event that the Contractor defaults in carrying our such order/s, the Supervisor and/or the Supervisor's Representative shall have the power to employ and pay other persons to carry out same at the Contractor's expense and the cost of same shall be deducted from monies due to the Contractor.

5.11 The Contractor shall, if ordered in writing by the Supervisor and/or the Supervisor's Representative, suspend the Works or any part thereof for such periods and at such times as so ordered and shall not, after receiving the order, proceed with the work there in order to be suspended until he receives written authorization from the Supervisor and/or the Supervisor's Representative to proceed therewith. The Contractor shall not be entitled to any claim for compensation for any loss or damage as aforesaid.

5.12 Should it be deemed by the Supervisor and/or the Supervisor's Representative, or any duly authorized member of his/their staff that any work in progress is being executed in a faulty or defective manner or with unsuitable materials, by unskilled workers or by any means or manner not in accordance with the Contract documents, then he/she or they may order immediate suspension of such faulty or defective works or materials by direct order to the Contractor's supervisory staff, foreman or ganger, until such time as the Contractor shall adopt remedial measures to the satisfaction of the Supervisor and/or the Supervisor's Representative. Such order shall be complied immediately by the Contractor, and he shall not be entitled to any extra payment, compensation or extension of time for Completion on account of such.

5.13 Verbal instructions issued by the Supervisor or the Supervisor's Representative shall be confirmed in writing within five (5) working days.

Article 8: Supply of Documents

8.4 The Contracting Authority shall provide all necessary documentation and drawings necessary to commence the works. Such documentation shall be provided within ten (10) working days from last signature of the contract.

Article 10: Assistance with Local Regulations

10.3 As per General Conditions.

Article 11: The Contractor's Obligations

11.1 As per General Conditions.

11.2 Further to the General Conditions, the contractor shall be responsible for ensuring that works are carried out with good workmanship and unnecessary degradation to the site and its surroundings is carefully avoided at source.

11.3 Further to the General Conditions, where necessary the Contractor shall undertake to perform works outside normal working hours, and on public holidays and weekends at no additional cost to the Contracting Authority so as to ensure the completion of Works with the required timeframe, in accordance with the Technical Requirement and with the Period of Execution.

11.8 As per General Conditions.

11.9 Further to the General Conditions, the Contractor shall draw up and submit for the Supervisor's approval a programme of performance of the contract.

11.10 As per General Conditions.

11.20 The contractor shall bind himself to stringently adhere to the conditions imposed in in Planning Authority Permit PA/01446/21 as approved by the Planning Authority. All permit conditions, relevant drawings and reports can be viewed on the Planning Authority e-Applications portal.

Article 13: Performance Guarantee

13.1 The Contractor shall, within 15 calendar days of receipt of the contract, sign and date the contract and return it to the Contracting Authority together with an original Performance Guarantee. The contract will not be endorsed by the Contracting Authority until the performance guarantee is submitted. The Contractor is therefore obliged to forward the original Performance Guarantee to the Contracting Authority. The amount of the guarantee shall be 4% of the annual contract value where the amount of the total contract value is between €10,000 and €500,000 ex VAT, and 10% where the amount of the total contract value is €500,000 or above.

13.2 In the case that the value of the contract does not exceed €10,000, no Performance Guarantee is required.

13.3 Economic Operators have the possibility to provide the Contracting Authority with a Single Bond covering the performance guarantees for all the contracts with the same Contracting Authority. If an additional contract is awarded to a given contractor, which results in an economic operator's current cumulative contracts value to go beyond the contract value range currently covered by the Single Bond, the contractor is to be requested to; either submit a separate Performance Guarantee for the additional contract; or else submit a new Single Bond to cover

the new total contracts value or submit an amendment to the original Single Bond specifying the new amount. If an Economic Operator chooses to make use of the Single Bond, he must submit a letter from the respective Contracting Authority specifying that the amount of the Single Bond covers the new Contract, otherwise the new Contract Agreement would not be signed.

13.5 The performance guarantee shall be in the format given in Section 4 and shall be provided in the form of a bank guarantee. It shall be issued by a bank in accordance with the eligibility criteria applicable for the award of the contract.

13.9 The performance guarantee shall be released within thirty (30) days from the issue of the provisional acceptance certificate.

Article 14: Insurance

14.1 Insurance taken out by the Contractor in the Contracting Authority's name shall be deemed to extend to include all the Contracting Authority's employees and appointees having a link to the contract.

14.2 The insurance shall also cover:

A. *Contractor's Third-Party Liability Insurance Cover*

i) liability arising from failure by Contractor to set out and/or to otherwise properly maintain adequate traffic signs, warning of impeding hazards and corresponding protection, and to keep the work sites adequately lit at night;

ii) liability for damages to third parties and third-party property, up to the amount of €1,000,000 in respect of each occurrence arising out of one event;

iii) during the course of the works, liability for the loss or damage of parts of the finished works for which interim payments by the Contracting Authority have already been affected, in the event that Contractor fails to replace or repair such loss or damage;

provided that, in the event, that the Contractor has to replace or repair any defective work during the subsequent stipulated guarantee period, then in any such case, he shall be bound to ensure that the insurance is in force throughout the time during which he is actually affecting such replacement or repair.

B. *Employer's Liability Insurance Cover*

This policy is to cover all contracted employees assigned to this contract against any loss, damage, death or bodily injury which may occur to any person, which may arise out of the performance of the Contract or in connection with the required scope, as a consequence of negligence, breach of statutory duty, omission or default of the part of the Contractor, or any person for whom the Contractor is responsible, including, without limitation, the Contractor's personnel and any subcontractors. Such insurance shall have a cover of €2,000,000 (two million Euros) per occurrence up to an aggregate of €4,000,000 (four million Euros) and shall include a cross-liability clause such that the insurance shall apply to the Contractor and the Contracting Authorities as separate insured entities. The contractor shall affect and maintain insurance against any losses and claims arising from loss or damage to property of from the death or injury to any person employed by the Contractor or any of its Sub-contractors, in such manner that the Contracting Authorities and the Contracting Authorities' Representative are indemnified under the policy of insurance. In relation to sub-contractors' employees, such insurance may be

affected by the relevant Sub-contractor, but the contractor shall be responsible to ensure full compliance.
This insurance covers shall be submitted to the Contracting Authorities within five (5) working days from the commencement date specified in Article 31 of the Special Conditions.

14.3 Further to the General Conditions, the insurance cover as set out in Clause 14.3 of the General Conditions of Contract shall be at least €750,000 per occurrence with the number of occurrences unlimited. In the case of personal injuries, the capping shall be a minimum of €1,500,000.

14.4 Further to the General Conditions, the insurance cover as set out in Clause 14.4 of the General Conditions of Contract shall be at least €750,000 per occurrence with the number of occurrences unlimited.

14.5 All insurances required under the contract shall be in place within one (1) week of the acceptance of award by the Contractor. If requested, the Contractor is to send a copy of the insurance policy by not later than five (5) working days after the order to start works is issued. The insurance shall be left in place until the issuance of the Final Acceptance Certificate issued at the elapse of the maintenance period.

14.6 If the Contractor fails to have an insurance in place as per conditions of contract, he shall be personally responsible for any damages arising thereof. Moreover, when the Contracting Authority finds out about such default, it shall either pay the outstanding insurance premium itself, provided this amount and any administrative expenses can be recouped from monies due to Contractor or it will ipso jure terminate the contract and appoint others to complete the works at the Contractor's expense should difference in rates apply.

14.7 It shall be the responsibility of the Contractor to make adequate provisions for the taking out of any additional insurance in respect of plant, worker safety and the works in general as he may deem appropriate.

The indemnity referred to in section 14.7 of the General Conditions for Works Contract shall extend to include the Contracting Authority and all its employees and appointees having a link to the contract.

When a third-party claim is forwarded to contractor, the latter shall, within 2 weeks from notification, open a claim with its insurance company and proof thereof provided to the Contracting Authority.

Article 15: Performance Programme (Timetable)

15.1 The Contractor shall, within three (3) days upon last signature of the contract, hold a meeting with the Project Manager/Supervisor to discuss details and information regarding the setup of a Performance Programme. The Contractor must submit to the Project Manager/Supervisor the Performance Programme including any requirements by the Project Manager/Supervisor within five (5) days following the meeting with the Project Manager/Supervisor. The Project Manager/Supervisor shall approve the Performance Programme within three (3) days from receipt.

15.2 If the Contractor fails to submit said Performance Programme by the due date or within three (3) days from the Project Manager/Supervisor's instruction to do so, then the Project Manager/Supervisor shall draw the Performance Programme himself and/or establish interim milestones himself. This updated document shall be binding on the Contractor and the Contracting Authority, and any related expenses involved in the compilation of the

programme/milestone plan will be charged to the Contractor's account and deducted by the Project Manager/Supervisor from monies due to the Contractor

Article 17: Contractor's Drawings/Diagrams

17.1 Further to the provisions of the General Conditions, the Contractor shall submit manuals, drawings, documents, samples and/or models as per Section 3 - Specifications within five (5) working days from being requested to do so.

17.7 As per General Conditions.

Article 18: Tender Prices

18.1 The tendered rates shall be inclusive of all work specified as well as any other works that are of a contingent or indispensable nature for completing the work in its entirety. The rates shall be inclusive of all materials necessary, profits and payments of Customs Duty and Landing charges on all imported goods, Taxes ECO contributions, all hire of plant and machinery required as also all transport of materials to the site of works and so on. Quoted rates are final and binding. No claims arising from failing to ascertain site conditions and arising for failing to take into consideration inherent expenses in the nature of the work, shall be entertained.

Article 20: Safety on Site

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

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

20.4 Further to the provisions of the General Conditions, the Contractor shall be obliged to make all necessary arrangements to allow safe access into the site to any Contracting Authority representatives and/or press entities visiting the site in connection with Project publicity events.

Article 22: Interference with Traffic

22.1 Further to the provisions of the General Conditions, the Contractor shall be responsible for obtaining all approvals and permits from the relevant authority/s, with respect to the routes of plant and equipment and material, to and from the site. The contactor shall consult with the Local Council, Transport Malta, Malta Public Transport, Malta Police Force and all other stakeholders when and if required to successfully carry out the works.

Article 25: Demolished Materials

25.1 Further to the General Conditions, Contractor will remove and dispose of such materials in accordance with the instructions given to him by the Contracting Authority and shall provide the Contracting Authority with all requested documentation confirming disposal of such material in accordance with these instructions.

25.2 Further to the provisions of the General Conditions, demolished material will be disposed of by the Contractor at his own expense in an environmentally friendly manner. Proof may be requested by the Contracting Authority at its own discretion.

25.4 As per General Conditions.

Article 26: Discoveries

26.2 As per General Conditions

Article 28: Soil Studies

28.1 As per General Conditions.

Article 30: Patents and Licences

30.1 As per General Conditions.

Article 31: Commencement Date

31.1 Following the last signature of the Contract Agreement, the Contracting Authority shall issue an order to start works. The date of the issue of the order to start works shall be the Contract commencement date. Such commencement order shall be issued not more than 90 days from the date of the last signature of the contract.

Article 32: Period of Execution of Tasks

32.1 As soon as order to start works is given to the contractor, the contractor shall proceed with the works. The performance period shall be forty-five (45) weeks from the order to start works.

Article 34: Delays in Execution

34.1 Further to the General Conditions, any delay in completing the works as specified in Clause 32.1 will be charged a flat rate of €250 per calendar days delay, up to a limit of 30% of the value of the contract. Any amount that may so become liable for payment to the Contracting Authority may be set off against payment due to the Contractor for works or services carried out on this contract.

Furthermore, the contractor shall be liable to a penalty of €200.00 per calendar day up to a limit of 20 % of the total contract price for each calendar day in which the Contractor fails to submit the detailed programme of works as requested in the provisions of Article 15 of the Special Conditions.

34.2 Further to the provisions of the General Conditions, upon reaching the maximum penalty, the Contracting Authority reserves the right to invoke Clause 34.2 of the General Conditions for Works Contracts.

34.3 Further to the General Conditions, should it result to the Contracting Authority that the rate of work of the Contractors is leading to delay in execution, the Contracting Authority may engage other Contractors to carry out the works, or any part thereof at the defaulting contractor's expense. The latter shall further be liable to any applicable penalties.

Article 35: Modification to the Contract

35.8 The Contracting Authority may request the repetition of services and supplies not exceeding 30% of the contract value. Such repetition of works can be exercised in instances where it is necessary to amend the quantities in order to achieve the original scope of the contract and these inter alia may be requested due to unanticipated circumstances such instances including but not limited to, revised excavation and construction details due to site conditions discovered/arising during works.

The prerogative to order such repetition of services shall vest in the Contracting Authority and if not used the Contractor shall have no claim against Government.

35.9 ***The Contracting Authority will have the right to instruct the execution of additional works (i.e. new works not included in the original contract) up to a maximum of 20% of the contract value. Such additional services can be exercised in instances where it is necessary in order to achieve the original scope of the contract pertaining to any new Regulations and/or Laws, heritage or geotechnical issues and these inter alia may be requested due to unanticipated circumstances. Before ordering additional works the Contracting Authority shall obtain the approval of the Central Government Authority.***

Article 37: Work Register

37.1 As per General Conditions.

37.2 As per General Conditions.

37.3 As per General Conditions.

Article 38: Origin

38.1 As per General Conditions

Article 39: Quality of Works and Materials

39.2 As per General Conditions.

Article 40: Inspection and Testing

40.2 The Supervisor shall be entitled, either by himself or through his agent, to inspect, examine, measure and test the components, materials and workmanship, and check the progress of preparation, fabrication or manufacture of anything being prepared, fabricated or manufactured

for delivery under the contract, in order to establish whether the components, materials and workmanship are of the requisite quality and quantity. This shall take place on the site.

Article 42: Ownership of Plants and Materials

42.2 Further to the General Conditions, materials supplied to the Contractor by the Contracting Authority shall remain the property of the Contracting Authority. However, Contractor shall be solely responsible for the storage and safety of all materials on site and for the costs incurred in connection to such storage and safety.

Article 43: Payments: General Principles

43.1 Payments will be made in Euro. This is a Bill of Quantities works contract.

Further to the provisions of the General Conditions, given this tender exceeds the €100,000 excluding VAT, and the implementation is longer than four (4) weeks) there shall be a pre-financing of 40% of the contract award.

Payments shall be authorized by the Contracting Authority and paid by the Treasury Department as follows:

Narrative	Percentage (%)
Pre-financing Payment	40% of the contract price after the signing of the contract, against a provision of a pre-financing guarantee as a security guaranteeing repayment in full of this prefinancing.
Interim Payment 1: Due following the measured completion of 50% of the contract value.	10%
Interim Payment 2: Due following the measured completion of 75% of the contract value.	25%
Interim Payment 3: Balance Due following the measured completion of 95% of the contract value.	20%
Retention amount shall be withheld for one year to cover the Defects Liability Period during which contractor will be responsible, at his own cost to make good any defects that emerge after the works are certified as complete.	5%
TOTAL	**100%**

43.3 As per General Conditions.

Article 44: Pre-financing

44.2 According to Article 43.1 of the Special Conditions, a pre-financing amount of 40% of the original contract value is applicable upon the Contractor providing the Contracting Authority with a pre-financing guarantee for the full amount (exclusive of VAT) issued by one of the institutions

referred to in Article 13. The amortization of the pre-financing will be carried out as specified in Clause 43.1 of these Special Conditions.

Article 45: Retention Monies

45.1 A sum equal to 5% of the amount due to the Contractor under each interim payment shall be withheld by way of retention monies. Retention monies shall be withheld by the contracting authority to guarantee performance of the Contractor's obligations during the Works Maintenance and Defects Liability Period equivalent to twelve (12) months from the completion of on-site works as attested by the issue of the Provisional Acceptance Certificate by the Contracting Authority to the Works Contractor.

The Retention Guarantee shall be released upon expiry of the Maintenance and Defects Liability Period and following the issue of the Final Acceptance Certificate to the Contractor. Failure by the Contractor to fulfill his obligations under the Contract during the Works Maintenance and Defects Liability Period shall lead to partial or full forfeiture of the Retention Guarantee by the Contracting Authority.

Article 46: Price Revision

46.1 As per General Conditions.

46.2 Where prices may be revised under the contract, such revision shall take into account modifications in the prices of significant local or external elements which served as a basis for the calculation of the tender price, such as manpower, services, materials and supplies, as well as charges laid down by law or regulation.

Prices contained in the Contractor's tender shall be deemed:

a) to have been determined on the basis of the conditions in force up to the date fixed for submission of tenders, in the case of direct agreement contracts, on the date of the contract;
b) to have taken account of the legislation and the relevant tax arrangements applicable at the reference date fixed in sub-criteria(a).

46.3 In the event of changes to, or introduction of, any national or state statute, ordinance, decree or other law, or any regulation or bye-law of any local or other public authority, after the date fixed for the submission of tenders, which causes a change in the contractual relationship between the parties to the contract, the Contracting Authority and the Contractor shall consult on how best to proceed further under the contract, and may as a result of such consultation decide, with the prior approval of the Central Government Authority:

a) to modify the contract; or
b) to provide for compensation for any imbalance caused by one Party to the other; or
c) to terminate the contract by mutual agreement.

46.5 At the end of the period of performance, revised as necessary in accordance with the contract, the Contractor cannot claim for further revision of prices within the submission of the final report.

Article 47: Measurement

47.2 Measurement of works should take place in the presence of both the Contractor's representative and the Contracting Authority.

Article 48: Interim Payments

48.1 Further to the provisions of the General Conditions, interim payments shall be made as per the payment schedule in Article 43.1.

Article 50: Delayed Payments

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

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

- at the rediscount rate applied by the issuing institution of the country of the Contracting Authority;

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

Article 53: End Date

Not applicable.

Article 56: Partial Acceptance

56.3 Partial provisional acceptance shall not be applicable to this works contract.

Article 57: Provisional Acceptance

57.3 An assignment of work shall be considered provisionally complete for handing over when all the work in the contract has been completed. The works shall be taken over by the Contracting Authority upon the issue of the Provisional Acceptance Certificate.

Article 58: Maintenance Obligations

58.3 Further to the provisions of the General Conditions, in the case of defects to be corrected by the Contractor, the Contractor must begin the correction works within three (3) calendar days from notification letter sent by the Contracting Authority.

58.7 Further to what is stated in the General Conditions, the liability period shall be of twelve (12) months following the completion of the works and the issue of the Provisional Acceptance Certificate.

Article 66: Dispute Settlement by Litigation

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

a) either a ruling from a Maltese court, or

b) an arbitration ruling, in the case where the parties, i.e. the Contracting Authority and the Contractor, by agreement decide to refer the matter to arbitration.

Article 70: General Data Protection Regulations (GDPR)

70.1 As per general Conditions

SECTION 3 - TECHNICAL SPECIFICATIONS (Note 3)

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

SECTION A: EARTH WORKS

1.1 General

1.1.1 Earthworks shall generally comply with BS 6031 - Code of Practice for Earthworks or equivalent.

1.2 Compliance - Sample Size and Frequency of Sampling (Where Applicable)

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

1.3 Compliance - Testing and Certification

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

1.4 Preliminary inspection for Existing Services

1.4.1 The Contractor, subject to any instructions or contrary directions in accordance with the Contract, shall inspect the site, take all actions necessary to establish and/or verify the presence or absence of existing services, pipes, drains, cabling and supplies and precisely identify and document such findings on detailed plans and cross-sectional drawings. These shall be presented to the Project Manager for review.

1.5 Works to commence only on Instructions

1.5.1 The Contractor shall commence or proceed with excavations only on instructions from the Project Manager.

1.6 Caution

1.6.1 The Contractor, subject to any instructions or contrary directions in accordance with the Contract, shall take all actions, measures and precautions required by any recognised public entity or owners of privately owned services or supplies, for rendering safe, disconnecting and properly sealing off of all pipes, drains, cabling, services and supplies.

1.7 Excavations

1.7.1 All excavation shall be carried out in any extractable materials encountered to the lines and levels shown on the Drawings or as directed by the Project Manager.

1.7.2 Excavation shall be carried out by hand or machine as found expedient for the work to be executed, including grading and trimming the bottom of the excavations to the precise levels required. The Contractor shall take all precautions necessary to avoid damage to existing services.

1.7.3 The sides of excavations in open cut shall be trimmed and made safe to the satisfaction of the Project Manager.

1.8 Organic Topsoil

1.8.1 Topsoil which is stripped from the natural ground surface, and which contains sufficient organic matter for the germination of grass seed shall be stockpiled in a distinct and separate stockpile and under no circumstance shall it be used for fill operations. Disposal shall be subject to the local regulations.

1.9 Soft Areas

1.9.1 Soft areas which, in the opinion of the Project Manager, are unsuitable for bearing the overlying construction and applied loadings, shall be removed to such depths and widths as directed, and the material excavated shall be removed from the Site. The excavation shall be backfilled with fill material approved by the Project Manager. The Contractor may be requested to provide a Method Statement for backfilling and compaction operations for the approval of the Project Manager.

1.10 Stability of Existing Structures

1.10.1 All excavation shall be carried out in such a way as not to endanger the stability or safety of any existing structure or any part of the permanent or temporary works. Any temporary measures necessary in order to comply with this requirement shall be agreed with the Project Manager. The Contractor is to allow in his rates for excavation, all the necessary planking and strutting. The Contractor is at all times responsible for the safety of the excavations; He is to provide all necessary planking and strutting to ensure this. Should any damage result to the excavations or works, the Contractor will be held entirely responsible and any extra work required by virtue of this will be entirely at his own expense.

1.11 Control of Water

1.11.1 Excavation for foundations of structures shall be carried out, generally, "in the dry". Water shall not be allowed to accumulate in the excavations and the Contractor shall install and maintain such pumping or other water control measures as are necessary, due regard being paid to the stability of adjacent structures. Any subsidiary water run-off systems shall be approved by the Project Manager and must be of a temporary nature. Any damage caused by inadequacy of these water control measures shall be made good at the Contractor's own expense.

1.12 Over- Excavation

1.12.1 In the event of the Contractor over excavating below the appropriate levels or beyond the alignments shown on the Drawings or directed by the Project Manager, the Contractor shall, at his own expense, fill the excavation to the proper level specified with concrete of the same quality used in the foundation.

1.13 Earthworks Fill Material over Subgrade

1.13.1 Earthworks fill material shall comply with Table 6/1 of the Transport Malta Specification for Roadworks. The general requirements as indicated in clause 602, 603, 608, 610, 611 and 612 of the Transport Malta Specification for Roadworks shall also apply.

1.13.2 Earthworks material testing shall be carried out in accordance with BS 1377 or equivalent, Parts 1 to 9.

1.13.3 The requirements for grading shall comply with Table 6/2 of the Transport Malta Specification for Roadworks.

1.13.4 The Contractor shall adopt either the Method or End product procedure for compaction as indicated in the Transport Malta Specification for Roadworks, clause 612.

1.14 Subbase Material

1.14.1 Granular Subbase Type 1 material shall comply with Transport Malta Specification for Roadworks, Volume 1, Series 800, clause 803.

1.14.2 Granular Subbase Type 2 material shall comply with Transport Malta Specification for Roadworks, Volume 1, Series 800, clause 804.

1.14.3 Granular Subbase Type 4 material shall comply with Transport Malta Specification for Roadworks, Volume 1, Series 800, clause 806.

1.14.4 The material shall be placed and compacted as indicated in Transport Malta Specification for Roadworks, Volume 1, Series 800, clause 801 with particular reference to Table 8/1.

1.14.5 Compaction shall be carried out at the optimum moisture content (+/- 2%). Segregation of material shall be avoided.

1.14.6 The finished surface levels of subbase material shall have a tolerance of +/- 20mm.

1.15 Aggregates

1.15.1 Aggregates for unbound and hydraulically bound layers shall comply with Regulation (EU) 305/2011 or equivalent. The technical characteristics shall comply with EN 13383-1 or equivalent.

1.16 Level Surveys

1.16.1 A level survey is mandatory prior to and on completion of excavations and fill operations. This shall be extended to include any superimposed new layer. This survey shall be along an adequate grid to be jointly established with the Project Manager.

1.17 Contractor's Responsibility

1.17.1 Cultivated trees, shrubs, and grass in rights-of-way or easements, but outside the specified limits for excavation, shall be protected and preserved during the entire period of construction. Site preparation shall be considered incidental to the construction work and no specific payment will be made therefore, unless otherwise noted in the contract documents.

1.17.2 The Contractor shall be responsible for all notifications for inspections and testing as outlined in the specifications.

1.17.3 The Contractor is responsible for the disposal of all debris resulting from clearing, grubbing, and demolition work in a manner and location satisfactory to the Project Manager. If stockpiling is done adjacent to excavations, the Contractor is responsible for ensuring they are placed in such a manner that no damage will result to the work or property in the event of rain.

1.18 Site Work

1.18.1 All large roots and stumps shall be removed to a depth of at least 600mm below the original surface. Pits or cavities resulting from the grubbing which extend beyond the excavation limits shall be backfilled as specified herein.

1.18.2 In the presence of underground services, utilities or structures the Contractor shall use a high degree of caution. The Contractor shall bear all costs of repairing underground utilities or structures damaged in the work and shall be fully responsible for all damage to other property and persons

resulting from damage to the underground utilities and structures. All damages shall be repaired within a reasonable time.

1.19 Areas outside the Construction Limits

1.19.1 Areas outside the designated construction limits shall not be disturbed.

1.20 Types of Excavations

1.20.1 The sites for structures shall be excavated large enough to permit proper erection of the forms, de-watering, and placement of concrete, but the excavation shall not be excessively large.

1.20.2 Banks shall be sloped to a safe angle except where such sloping would endanger or damage existing or proposed facilities. The bottom of the excavation shall be true to the required shape and elevations shown on the drawings. Backfilling with excavated material under structures will not be permitted.

1.21 Trenching

1.21.1 Trenches shall be cut to the lines and grades shown on the Drawings or established by the Project Manager. The banks of trenches shall be cut in vertical, parallel planes equidistant from the centerline of the pipe, except where conditions will not permit vertical banks.

1.21.2 Where it is not practical to cut vertical banks, or where unprotected vertical banks would create dangerous conditions, the banks may be sloped to any width providing existing and proposed facilities will not be damaged or endangered. Sloped surfaces shall terminate at a level that will permit the achievement of the required surround depths shown on the Drawings.

1.21.3 Where trench excavation may damage roadways, utility poles, pipelines, conduits, or private property or create conditions dangerous to workmen, the Contractor shall install suitable shoring for their protection. No specific payment will be made for shoring except for that which the Project Manager orders to remain in place.

1.21.4 The bottom of all trenches shall be cut level in cross section and shaped to conform to the bottom of the pipe so as to afford full bearing on the pipe barrel, except where concrete cradles and surrounds, foundation material, or embedment material is to be installed. Bell holes shall be excavated so as to relieve pipe bells of all load, but small enough to ensure that support is provided throughout the length of the pipe barrel.

1.21.5 Trenches shall not be excavated excessively in advance of pipe laying. The work shall be performed so as to prevent any serious interruption of travel by the public and also to afford necessary access to public and private premises. Temporary bridges or cross walks shall be built where necessary to maintain traffic in a safe manner.

1.21.6 The sides of all trenches and excavations for pipelines and structures shall be securely held in place by stay bracing or by skeleton or solid shoring and bracing, as necessary to prevent slides, settlement, or movement of the unexcavated material. Wood or sheet steel piling shall have sufficient strength and rigidity to withstand the pressures and maintain the walls of the excavation and protect all persons and property from injury or damage.

1.21.7 Where excavations are made adjacent to buildings or other structures, or in paved street, the Contractor shall take particular care to sheet and brace the sides of the excavation adequately so as to prevent any settlement beneath the structures or pavement. The Contractor shall be solely responsible for any damage to any structure or injury to any person that results from his operations.

1.21.8 Bracing and sheeting may be removed in units when the level of the backfilling has reached the elevation necessary to protect the pipe work and adjacent property. When, in the opinion of the

Project Manager, sheeting or shoring above this level cannot be safely remove, it shall be left in place and the Contractor will be paid for the material left in place. Sheeting so ordered to be left in place shall be cut off at least 300mm below the surface.

1.22 Rock

1.22.1 Rock shall be defined as any material, not of a granular nature, which occurs in its original position in ledges or bedded deposits of such hardness or texture that cannot be loosened, broken, or removed without the use of special equipment. The rock shall be completely stripped of all overburden. The Project Manager or his representative will then make the necessary measurements and take elevations on the rock to determine the volume of rock to be removed.

1.22.2 In trenches for pipelines, rock shall be removed for the overall width of the trench, which shall be as shown on the Drawings, and to a minimum depth of 150mm below the bottom of the pipe for pipes smaller than 600mm in diameter.

1.23 Blasting with Explosives

1.23.1 Blasting with explosives is strictly PROHIBITED.

1.24 Backfilling Trenches

1.24.1 The backfilling of trenches shall commence immediately after the pipes have been installed, inspected and approved by the Project Manager. In general, trenches shall be backfilled as shown on the Drawings for and mechanically compacted to the specified requirements as the material is placed in layers.

1.24.2 The Contractor shall replace all surface materials and restore all paving, kerbing, sidewalks, fences, shrubs, and grass damaged or removed in the work, to a condition equal to that before the excavations.

1.25 Disposal of Materials

1.25.1 On completion of any part of the work disposal shall be made of all surplus or unused material within the construction limits of such work and the surface of the work left in a neat and workmanlike condition.

1.25.2 Disposal of excavated materials shall be considered an integral part of the excavation work.

1.26 Maintenance

1.26.1 All excavated areas, backfill, embankments, trenches, access roads, and ditches shall be maintained by the Contractor in good condition at all times until final takeover by FTS.

SECTION B: FRANKA STONE AND HOLLOW CONCRETE BLOCKS MASONRY WORKS

2.1 Compliance - Sample Size and Frequency of Sampling (Where Applicable)

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

2.2 Compliance - Testing and Certification

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

2.3 Name and location of Quarry

2.3.1 The Contractor shall submit the name, location and licence number of the supply quarry from where the stone blocks will be cut. The quarry shall be approved by the Architect and cannot be changed without his approval.

2.3.2 Natural stone (Globigerina limestone blocks - "franka") shall be totally free of any "soll" traces and blue markings ("swaba kohol"). The stone shall have good and consistent aesthetic qualities, good durability, and uniformity of appearance. The stone has to be fine-grained and free from spits and clayey material. It shall not contain excessive quantities of red stains or hard shell fragments. There shall be two types of blocks, one for all external walls, which shall be white and from the top part of the quarry, and one for internal walls and foundations, which shall be from the lower face of the quarry

2.3.3 Blocks with excessively chipped edges and corners shall be removed.

2.4 Compressive Strength

2.4.1 The Contractor may be requested to furnish test certification stating the cylinder compressive strength of the material.

2.5 Stone Sizes

2.5.1 All stone blocks shall be cut as smooth as possible before delivery to the site of works. All arises shall be true, and all surfaces plane and truly perpendicular to each other, and to a finished uniform height. The stone blocks shall be delivered to the site on suitable pallets, clearly marked as to the type. All stone blocks shall be unloaded carefully to prevent damage and wastage.

2.5.2 The finished size of stone blocks shall be in accordance with the Building Stone Order, Legal Notice 47 of 1976.

2.6 Workmanship

2.6.1 Stone blocks shall be laid in a stretcher bond course pattern.

2.6.2 All stone blocks shall be dressed to accurate planes and shall be neatly fine-tooled on the face.

2.6.3 The "spika" and any arrises shall be dressed square.

2.6.4 Stone blocks above DPC level shall be rendered smooth either manually or mechanically.

2.6.5 Mechanical planers, band and rotary saws are permitted but dust control measures are required and operators shall use protection for nostrils and eyes.

2.6.6 "Fuq il-fil" courses shall be placed to form a consistent pattern with perpends in strict alternate distributive vertical alignment including joints, curved and flat arches, jambs and ornaments.

2.6.7 The finished walls shall normally have a course height (including mortar) of 270mm.

2.6.8 Jointing of blocks in horizontal courses shall be by the "inkulmar" method. Jointing shall only proceed at the end of full course placement. Vertical joints are to be broken at not less than 150mm.

2.6.9 Courses shall be laid true to lines and levels and with corners straight and plumb. Jambs shall be square and plumb. In double wall construction they shall extend the whole width in an alternate manner.

2.6.10 Double wall shall have adequate bond stones, properly damp proofed as shown on the drawings.

2.6.11 Quoins of all openings shall be protected during construction.

2.6.12 Stone Block lintels shall not be centrally loaded.

2.6.13 Voussoirs shall be to the exact curvature as detailed in the drawings having all blocks of the same curved length including the key block.

2.6.14 Alternate corner lock blocks shall be interlocked the full width using a suitable toothing technique.

2.6.15 Dressing templates (mollijiet) shall be approved by the Architect and shall remain the property of the Employer after use.

2.6.16 Flat arches shall be as detailed in the drawings having all blocks of the same width including the key block. Flat arches shall be jointed with a mix of 1:1 cement/water grout placed in vertical insets cut along the vertical jointing plane.

2.6.17 Drip channels shall be provided or formed at exposed window sills, projecting mouldings and edges.

2.6.18 Coping stones to concrete shall have flexible movement inserts as indicated on the drawings.

2.7 Hollow Concrete Blocks

2.7.1 Hollow concrete blocks shall comply with EC Directive EC 97/740 or equivalent.

2.7.2 The technical characteristics shall comply with BS EN 771-3 or equivalent, Group 1.

2.7.3 The binder shall be Portland Cement Type CEM1, strength class 42.5N complying with BS EN 197-1 or equivalent.

2.7.4 Aggregate for use in concrete shall comply with BS EN 12620: Aggregates for concrete when tested to BS 812 or equivalent.

2.8 Dimensions - Hollow Concrete Blocks

Sizes shall be as follows:

Length	460mm;
Height	260mm;
Thickness	63mm, 115mm, 150mm, 180mm, 230mm, 300mm;

2.9 Dimensional Tolerances - HCB

The maximum dimensional deviation shall be as follows:

Length	+3mm, -5mm;
Height	+3mm, -5mm;
Thickness	+/-2mm with an average of +/-4mm at any individual point.

The faces and ends of blocks shall be perpendicular and to the tolerances as stated above.

2.10 Compressive Strength - HCB

2.10.1 Blocks having a thickness of 75mm and greater shall be tested for compressive strength as per BS EN 772-1 or equivalent.

2.10.2 The compressive strength shall be ≥ 7.0 N/mm2.

2.10.3 Blocks of thickness less than 75mm shall be tested for transverse strength as per BS EN 772-6 or equivalent. The average transverse strength of 5 blocks shall be ≥ 0.65 N/mm2.

2.11 Curing - HCB

2.11.1 Blocks supplied for the Works shall be allowed to cure for at least 30 days from the date of manufacture before being delivered on site.

2.12 Mortar - General

2.12.1 Horizontal mortar beds shall be between 9mm to 13mm thick. Fresh mortar shall be distributed evenly over the whole bedding plane. Vertical joints shall be between 5mm to 8mm thick. Pointing of both the horizontal and vertical joints shall be flush.

2.12.2 Mortar shall normally comprise of OPC cement, sand and limestone dust (xahx) adequately mixed with clean water to achieve good workability. It shall normally correspond strength class M4 mortar as denoted in BS EN 998-2 or equivalent.

2.12.3 The bedding plane shall be cleared of dust and the stone wetted before mortar is applied.

SECTION C: CONCRETE WORKS

3.1 General

3.1.1 The performance and production of concrete shall generally comply with BS EN 206-1: Concrete. Specification, Performance, Production and Conformity or equivalent.

3.2 Compliance - Sample Size and Frequency of Sampling (Where Applicable)

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

3.3 Compliance - Testing and Certification

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

3.4 Classification - Exposure

3.4.1 The exposure classes of concrete related to environmental shall be as classified in BS EN 206-1 or equivalent, Table 1 - Exposure Classes and Table 2 - Limiting Values for Exposure Classes for Chemical attack from natural soil and ground Water.

3.4.2 The concrete may be subject to more than one of the actions described in Table 1 and Table 2.

3.5 Classification - Consistency

3.5.1 The classification of consistency shall be as indicated in Table 3 - Slump Classes. The consistence suitable for different uses of in-situ concrete is indicated in BS 8500-1: Complementary British Standard to BS EN 206-01, Method of Specifying and Guidance for the Specifier, Table A.19 or equivalent.

3.5.2 Any addition of water and admixture at delivery is forbidden unless under the direct responsibility of the producer. Any additions at delivery are subject to the condition that any limiting values incorporated in the specification are not exceeded. All additions shall be recorded on the delivery chits.

3.6 Classification - Compressive Strength

3.6.1 The classification of compressive strength shall be as indicated in BS EN 206-01, Table 7, Column 3 - Minimum Compressive cube strength for normal-weight and heavy-weight concrete. or equivalent

3.7 Limiting Values

3.7.1 The recommended limiting values for the composition and properties of concrete shall be as indicated in BS EN 206-01, Table F.1 or equivalent.

3.8 Site Mixed Concrete

3.8.1 The production of site-mixed concrete shall be limited to non-structural use and in quantities smaller than 2m3.

3.9 Cement

3.9.1 Cement for use in concrete shall comply with Regulation (EU) 305/2011 or equivalent. Technical characteristics shall comply with BS EN 197-1: Cement. Composition, Specifications and Conformity

Criteria for Common Cements or equivalent. The cement shall be Portland Cement, Type CEM1, strength class 42.5N. CE marking is mandatory for all cement supplied for use in the concrete mix.

3.10 Cement Temperature

3.10.1 The temperature of the cement shall not exceed 65 Degrees Celsius at the time of incorporation into a concrete mix.

3.10.2 The cement shall be used as soon as possible after delivery; each consignment being used in correct rotation so as to prevent cement lying for long periods in storage. Accurate records shall be kept by the Contractor to identify the dates of delivery of cements.

3.10.3 Each consignment of cement delivered to the batching plant shall be accompanied by a certificate showing the place of manufacture and the results of standard tests carried out on each day's production, included in the consignment, these to include physical and chemical tests.

3.11 Cement - Supplier

3.11.1 Before placing orders for cement, the Contractor shall submit:

a) The Name of the proposed supplier.

b) Cement manufacturer's certificates stating the Declaration of Conformity Cement - Minimum Content in Mix.

The minimum cement for the specified maximum water cement (w/c) ratio and maximum aggregate size shall be as indicated in BS 8500-1: Complementary British Standard to BS EN 206-01 or equivalent, Method of Specifying and Guidance for the Specifier, Table A.18 or equivalent.

3.12 Aggregate

3.12.1 Aggregate for use in concrete shall comply with Regulation (EU) 305/2011 or equivalent. Technical characteristics shall comply with BS EN 12620 or equivalent, Aggregates for Concrete.

3.13 Aggregate - Test methods

3.13.1 Test methods for aggregates shall comply with EN 933 or equivalent, EN 1744 and EN 13179, EN 1367 and EN 1097 or equivalent.

3.13.2 Differing sizes of aggregate shall be stored on site in separate bins constructed in such a manner as to avoid cross-contamination of the individual aggregates. Bins should have concrete floors to prevent ground contamination of aggregates. Adequate provision for drainage shall be made and all aggregates are to be stored and handled so as to avoid segregation.

3.13.3 During hot weather the aggregates should be covered or shaded in order to reduce the mixing temperature. A water sprinkler system shall be installed to wet the aggregates in the storage bins.

3.13.4 A sufficient separate stockpile of the tested and approved aggregates shall be maintained on site to ensure that no delays occur during construction.

3.13.5 The maximum nominal upper aggregate size shall be 20mm unless indicated otherwise in the drawings.

3.13.6 Aggregate recovered from wash water or fresh concrete may be used as aggregate for concrete.

3.13.7 Aggregate recovered from hardened concrete may be used if the material is not contaminated and complies with the requirements of BS 8500-1: Complementary British Standard to BS EN 206-01 or

equivalent, Method of Specifying and Guidance for the Specifier, Table 2. The limitations in Table 3 shall apply.

3.13.8 The Los Angeles Coefficient of the combined coarse aggregate shall not exceed LA40.

3.14 Marine Sand - Prohibition

3.14.1 The use of marine and beach sand is prohibited.

3.15 Mixing Water

3.15.1 Mixing water for concrete shall comply with Regulation (EU) 305/2011 or equivalent. The technical characteristics shall comply with BS EN 1008 - Specification for Sampling, Testing and Assessing the suitability of Water, including Water recovered from processes in the concrete industry, as Mixing Water for Concrete.

3.16 Standby Water Supply

3.16.1 The Contractor shall install a standby water source of sufficient capacity to ensure continuation of concreting for sections of work being cast should water supplies be disrupted.

3.17 Admixtures

3.17.1 Admixtures shall not be used without the written approval of the Project Manager.

3.17.2 Admixtures for incorporation in concrete shall comply with Regulation (EU) 305/2011 or equivalent. The technical characteristics shall comply with BS EN 934-6: Admixtures for concrete, Mortar and Grout, Sampling, conformity control and evaluation of conformity or equivalent. Test methods shall be as indicated in BS EN 480, Parts 1 to 14 or equivalent.

3.17.3 The total amount of admixtures, if any, shall not exceed the maximum dosage recommended by the admixture producer subject to a maximum dose not exceeding 50g of admixture per kg of cement. Admixtures used in quantities of less than 2g/kg of cement are only permitted if they are dispersed in part of the mixing water. If the total quantity of liquid admixtures exceeds 3 l/m3 of concrete, its water content shall be taken into account when calculating the water/cement ratio.

3.17.4 Where more than one admixture is proposed for incorporation in the concrete mix, the compatibility shall be certified.

3.17.5 Calcium chloride and chloride-based admixtures shall not be added to concrete containing steel reinforcement, prestressing steel reinforcement or other embedded metal.

3.18 Additions

3.18.1 Additions (filler, pigments, fly ash, silica fume) shall not be used without the written approval of the Project Manager.

3.19 Chloride Content

3.19.1 The chloride content of a concrete, expressed as a percentage of chloride ions by mass of cement, shall not exceed the values given in BS EN 206-1 or equivalent, Table 10.

3.20 Designed Concrete

3.20.1 Concrete for structural use shall be designed concrete.

3.21 Designed Concrete - Trial Mixes

3.21.1 Designed concrete shall conform to the requirements specified in BS 8500-1 or equivalent: Complementary British Standard to BS EN 206-01 or equivalent, Method of Specifying and Guidance for the Specifier, Table 9.

3.21.2 Initial trial mixes shall be carried out on all mix designs prior to their use in the works. Trial mixes shall be produced using the plant and transport intended for use in the works, unless otherwise agreed by the Project Manager.

3.21.3 The mandatory trial mixes of each concrete grade shall be executed as per D.O.E (UK) method or approved equivalent.

3.21.4 The trail mixes shall be sampled and tested according to the requirements of BS EN 12350 and BS EN 12390 or equivalent. Accelerated curing techniques that predict 28-day cube crushing strengths with acceptable accuracy may be used.

3.22 Production Control

3.22.1 All concrete shall be subject to a production control system under the direct responsibility of the producer. The production control system shall cover, at least, the measures indicated in BS EN 206-1 or equivalent, clause 9 with particular reference to the recorded data and other documentation (See Tables 20, 21, 22, 23, 24).

3.23 Conformity Control and Conformity Criteria

3.23.1 The producer is responsible for evaluation of conformity. The tasks to be carried out by the producer shall be as indicated in BS EN 206-1 or equivalent, clause 10 with particular reference to Annex A.

3.24 Evaluation of Conformity

3.24.1 All concrete shall be subject to a conformity control system under the direct responsibility of the producer. The control system shall cover, at least, the measures indicated in BS EN 206-1 or equivalent, clause 8 with particular reference to clause 8.2.1.2 (Sampling and Testing Plan) and Tables 13, 14, 15, 17, 18, 19a, 19b).

3.25 Action in Event of non-compliance

3.25.1 In the event of non-conformity with the specified standards, the producer shall take the actions prescribed in BS EN 206-1 or equivalent, clause 8. The Project Manager shall approve the producer's proposal for action to be taken with regards to concrete already placed. This may range from rejection and removal of the suspect concrete to qualified acceptance, depending on the degree of non-compliance and the type of member involved.

3.25.2 The Project Manager may order further tests to be carried out on the hardened concrete which may include cored samples and non-destructive testing. The cost of such action and testing shall be at the Contractor's expense.

3.26 Concrete Mix - Information from the Producer and Delivery Chits.

3.26.1 The information from the Contractor to the producer shall be as indicated in BS EN 206-01 or equivalent, clause 7.1.

3.26.2 The information from the producer to the user shall be as indicated in BS EN 206-01 or equivalent, clause 7.2.

3.26.3 The producer shall provide a template of the delivery chits at least seven days before the start of the Works. These shall contain the minimum information contained in BS EN 206-01 or equivalent, clause 7.3.

3.27 Notification of Concrete Pours

3.27.1 The Contractor shall give the Project Manager 24 hours written notice of any intended concrete pour. The Contractor must submit a 'Notification of Concrete Pour' form for any intended concrete pour.

3.28 Concrete Pumps (Where Applicable)

3.28.1 Should the Contractor opt for the use of Concrete Pumps in placing operations the agreement of the Project Manager shall be sought.

3.29 Concrete Profilers (Where Applicable)

3.29.1 The use of Mobile Concrete Slipform Profilers is permissible. The plant, methodology, mix design, curing, alignment, levelling, joints and tolerances provisions shall be to the approval of the Project Manager.

3.30 Placing

3.30.1 Concrete shall not be placed unless the Project Manager or his representative is present and has previously examined and approved the positioning, fixing and condition of reinforcement, any other embedded items and the cleanliness, alignment and suitability of the formwork or other containing surfaces.

3.30.2 Concrete shall be deposited as early as possible in its final position and shall be placed in such a manner as to avoid segregation of the materials and displacement of formwork, reinforcement and other embedded items. The manner of placing shall be to the approval of the Project Manager.

3.30.3 Placing shall be continuous between specified or approved construction joints. The concrete shall be compacted and in its final position within two hours of the introduction of cement in the mix. Fresh concrete shall not be placed adjacent to concrete that has been already placed and compacted in excess of 45 minutes.

3.30.4 If, for any reason, the placing of concrete is discontinued, the Contractor shall immediately inform the Project Manager's representative. All works involved in any remedial measures shall be carried out at the Contractor's expense.

3.30.5 Concrete shall not be placed in running water and any water standing on areas to receive concrete shall be removed before concrete is deposited.

3.31 Batching of Concrete

3.31.1 Batching of constituent materials shall be as provided in BS EN 206-1 or equivalent, clause 9.7.

3.32 Delivery Trucks and Cleaning

3.32.1 All delivery trucks shall be certified as complying with BS EN 206-1 or equivalent, clause 9.6.2.3 and registered as suitable for their purpose in a data schedule. This shall include the calibration data in respect of water gauges. Arrangements will be made to designate an area where all concrete delivery trucks can wash out. This area will be situated well away from any concreting activities.

3.33 Workability

3.33.1 The workability of the concrete being placed shall be checked regularly by means of the slump test. When the measured slump is outside the specified limits, the concrete shall not be used in the works.

3.34 Execution - General

3.34.1 The execution concreting operations shall generally follow the provisions and requirements of BS 8110 or equivalent, Part 1:1997: Structural use of Concrete and ENV 13670-1 or equivalent: Execution of concrete structures.

3.35 Protection against rainfall

3.35.1 The Contractor shall provide adequate cover as necessary to protect concrete pours in progress against damage from rainfall.

3.36 Placing in High Temperature

3.36.1 Freshly placed concrete is to be given adequate protection to resist the combined evaporative effect of direct sunlight, air temperature, relative humidity and drying winds on the surface of the placed concrete, particularly for concrete placed in horizontal areas.

3.36.2 The Contractor shall take measures to control the maximum concrete temperature after placing and the temperature gradient within any concrete pour. The maximum concrete temperature after placing should not exceed 65 Degrees Celsius.

3.36.3 The Contractor shall supply suitable maximum/ minimum thermometers and record the shade and ambient temperatures at locations where concrete is being placed.

3.37 Compaction

3.37.1 The concrete shall be fully compacted throughout the full extent of the layer. It shall be thoroughly worked against formwork and around reinforcement or embedded items without displacing them. Compaction is to be in such a way that it does not promote a) segregation; b) formwork and reinforcement displacement,

3.37.2 Successive layers of the same lift shall be thoroughly worked together.

3.37.3 Care shall be taken to prevent the formation of air bubbles against vertical or sloping formwork.

3.37.4 Unless otherwise directed by the Project Manager, approved power-driven vibrators shall be used to ensure that the concrete is satisfactorily and uniformly compacted.

3.37.5 Surface vibrators of approved type, capacity and frequency shall be used to compact thin slabs, pavements and road slabs as directed by the Project Manager.

3.37.6 The position and arrangements of construction joints will be as shown on the Drawings or as approved by the Project Manager.

3.37.7 The surface of concrete already cast which is to receive further concrete is to have the laitance removed either when green by compressed air and/or water jetting or, if hardened, by micro hacking with light air picks. Care shall be taken not to crack concrete or loosen the aggregate. Before placing fresh concrete, the surface shall be clean, having no loose or foreign materials, and shall be wetted thoroughly.

3.38 Construction Joints

3.38.1 Fresh concrete after deposition shall be thoroughly compacted against all joint surfaces. Particular care shall be taken to prevent the leakage of grout at joints by use of adequate seals such as a foamed plastic strip compressed between the inner face of the formwork and the previously placed concrete.

3.39 Water Bars

3.39.1 Where ordered, water bars or water stops shall be inserted in joints and care shall be taken to ensure that the concrete is well compacted against them and that they are not damaged or displaced during placing operations. A half width of the water bars shall be inserted in one pouring of the concrete and the other half encased by a subsequent pouring. Joints in water bars shall be made as directed by the manufacturers.

3.39.2 Water bars shall include means, such as reinforced flanges to facilitate accurate and rigid fixing in the joint.

3.40 Expansion Joints

3.40.1 Expansion joints shall be formed in positions as shown on the Drawings or as directed by the Project Manager. Expansion joints shall be formed with joint material of the dimensions shown on the Drawings.

3.41 Sealing of Joints

3.41.1 The cavity for the joint sealer shall be of the dimensions shown on the Drawings and the surfaces shall be thoroughly cleaned and primed or de-bonded in accordance with the manufacturer's instructions before placing the sealant. The sealing compound in all joints shall be to the approval of the Project Manager, and of the type shown on the Drawings and shall be applied as directed by the manufacturers.

3.42 Curing and Protection - General Requirements

3.42.1 The Contractor shall ensure that curing is carried out in such a way that thermal and plastic cracking of the concrete does not occur.

3.42.2 For a minimum period of 7 days after placing the concrete, it shall be kept protected against loss of moisture, rapid temperature change, rain and flowing water, mechanical injury, contamination by airborne dust and sand, drying winds and surface heating by the sun's rays. This period may be increased on the instructions of the Project Manager.

3.42.3 Following the completion of the above period a further period of controlled drying out will be required as directed by the Project Manager. This may require that covers, sand layers and the like be kept in place for longer than the 7-day minimum curing period otherwise specified.

3.42.4 The Contractor's attention is particularly drawn to the importance of starting curing as early as possible after placing concrete and maintaining full curing procedures throughout, as specified and directed herein.

3.42.5 Any concrete which exhibits plastic settlement, or plastic early thermal contraction, or early drying shrinkage cracking, or which has not been properly cured, shall be rejected by the Project Manager.

3.43 Curing Methods

3.43.1 The Contractor shall prepare and submit his proposals for wet curing of concrete and for maintaining the curing regime to the standards and for the times specified herein. The method proposals shall be to the satisfaction of the Project Manager and the approved methods will be strictly enforced. Purpose-made curing frames will be provided by the Contractor for the vertical faces of the deck

and quay walls. Methods for other areas shall include the use of curing membranes, watering, covers, shades and any other precautions that are required for the Contractor to ensure satisfactory curing of the concrete. Where necessary, the Project Manager may insist on the use of thorough and continuous wetting of concrete surfaces.

3.43.2 The Contractor's attention is drawn to the recommendations of the American Concrete Institute (ACI) Standard 308-71, 'Recommended Practice for Curing Concrete'. These or similar methods will be required to satisfy the Project Manager in respect of the adequacy of curing methods.

3.43.3 The Contractor shall provide the necessary climate measuring equipment and check for conditions in which plastic cracking is likely to occur.

3.44 Curing Membrane

3.44.1 Curing membranes shall only be used where approved by the Project Manager. The Contractor shall submit full details of the materials he proposes to use including their comparative efficiency with respect to the specified method of water curing.

3.44.2 Where used, curing membranes shall be of resin based, white reflective type and shall be sprayed on the surface of the concrete as soon as all free water has evaporated from the surface, except where provided for below.

3.44.3 It shall be of a film type which fully degrades by exposure to UV light without leaving detrimental residue on the surface.

3.44.4 Curing membranes shall not in any case be applied until at least 7 days curing with water has been applied.

3.44.5 Where a surface treatment is to be applied to the concrete (eg. a surface hardener) a curing membrane shall only be used if it is compatible with the surface treatment.

3.45 Water Curing

3.45.1 The water used for curing shall be fresh water. The concrete shall be covered with sacking, hessian, or other absorbent material, or a 75mm layer of sand, kept constantly wet for 7 days and, where directed by the Project Manager, also covered with plastic sheeting to reduce loss by evaporation. Care shall be taken to ensure that the temperature of the water used during all stages of the curing process is as close as possible to that of the concrete being cured. Under no circumstances shall seawater be used for curing of concrete.

3.46 Use of Curing Covers

3.46.1 Curing of concrete surfaces may be carried out by sealing with opaque, reflective plastic sheeting held in close contact with the surface of the concrete and forming an airtight fit around the element to be cured. The sheeting shall form a continuous seal and be without tears or holes.

3.46.2 If necessary, the Contractor shall provide frames for the plastic sheeting so that the covers can be placed over deck slab pours immediately after the concrete has been floated off and before the brush finish is applied.

3.47 Wetting of Formed Surfaces

3.47.1 To compensate for any surface drying that has occurred and as soon as the forms are removed, formed surfaces shall be sprayed with water and allowed to reach a uniformly damp appearance before continuing with curing.

3.48 Curing of Concrete - Procedure

3.48.1 Curing of concrete shall proceed as follows:

a) Large Flat Areas, e.g. Slabs (Preferred Method)

i) Immediately after trowel finish, cover the concrete surface with polythene/wooden frames to minimise evaporation. All gaps at sides and ends must be filled in to avoid wind-tunnel effects.

ii) When the surface can carry weight, replace the frames by a layer of damp hessian covered by polythene sheet. The hessian must be kept continuously damp for 7 days (i.e. not wet/dry cycles), and suitable weights must be used to keep the polythene in place. If appropriate, surfaces may be ponded.

iii) After 7 days wet curing, apply white-pigmented resin based curing compound in accordance with the manufacturer's instructions.

iv) Cover with dry hessian for 14 days.

b) Flat Surfaces with Starter Bars

i) Shade the whole area from sunshine before concreting commences, leaving enough room for personnel/placing access, and ensuring that no gaps are left in the sides/ends which would allow wind-tunnel effects.

ii) As soon as concreting is complete, cover the top surface with damp hessian (which is to be kept continuously damp for 7 days) and a layer of polythene.

iii) Maintain cover-only curing from the 7th to the 14th day.

c) Vertical Surfaces

i) Leave formwork in place for at least 24 hours and keep continuously wet and then, after removing the forms, immediately wet the surface and cover the sides by damp hessian (which is to be kept continuously damp for 7 days) covered by white polythene.

ii) Maintain cover-only curing from the 7th to the 14th day.

3.48.2 Any necessary repairs or finishing processes shall be carried out as soon and as quickly as possible, only exposing small areas at any one time.

3.49 Use of Covers

3.49.1 Polythene sheeting shall be continuous without tears or holes and shall be white, opaque and reflective.

3.50 Thick Sections

3.50.1 The Contractor's attention is drawn to the need to take special precautions, such as careful planning of construction joint locations, to limit the build-up of heat in thick sections of concrete, particularly during hot weather.

3.51 Protection of Joints

3.51.1 Rebates formed to receive sealants, and the surfaces of construction joints shall be protected from curing membrane by wet Hessian, maintained continuously damp, to ensure proper curing of the

joint surface and the adjacent concrete. The wet hessian shall be maintained in place until the sealant is placed.

3.52 Curing Notices

3.52.1 Curing notices shall be exhibited for each concrete pour, stating the time and date when the concrete was placed, date for last wet curing and the date for completion of cover curing.

3.53 Curing of Repairs

3.53.1 All concrete repairs shall be cured in accordance with the above provisions.

3.54 Damaged Concrete

Any concrete found to have been damaged by weather effects shall be cut out and replaced with concrete as specified in this Specification, by the Contractor at his own expense.

3.55 Mass Concrete

The requirements for quality control, placing, compacting, testing and compliance for reinforced concrete shall apply equally to mass concrete.

3.56 Blinding Concrete

3.56.1 Wherever structural reinforced is shown on the Drawings as in contact with the ground and is to be constructed 'in the dry', a layer of concrete shall be provided as detailed on the Drawings.

3.57 Early Loading

3.57.1 At no time will concrete be subjected to any loading, including its own weight, which will induce a compressive strength in it exceeding 0.4 of its compressive strength at the time of loading, nor shall the induced stress exceed 0.33 of the specified characteristic strength.

3.57.2 For the purpose of this clause, the assessment of the strength of concrete and stresses produced by the loading shall be subject to the agreement of the Project Manager.

3.58 Waterproof Underlay

3.58.1 Any waterproof underlay shall be as indicated in the drawings.

3.59 Screeds

3.59.1 Screeds shall comply with Regulation (EU) 305/2011 or equivalent.

3.59.2 The performance characteristics of screeds shall comply with EN 13813, Screed material, properties and requirements.

3.59.3 The following test methodologies shall pertain:

Flexural and Compressive Strength:	EN 13892-2 or equivalent
Wear Resistance - Bohme or BCA:	EN 13892-3 or equivalent
Determination of Surface Hardness:	EN 13892-6 or equivalent
Bond Strength:	EN 13892-8 or equivalent

3.60 Lightweight Aggregates

3.60.1 The use of lightweight aggregates shall be subject to the approval by the Project Manager.

3.60.2 Lightweight aggregates shall comply with Regulation (EU) 305/2011 or equivalent.

3.60.3 The performance characteristics of screeds shall comply with EN 13055-1 or equivalent.

SECTION D: FORMWORK FOR CONCRETE WORKS

4.1 Formworks - General

4.1.1 The requirements for formwork shall generally follow the provisions and requirements of BS 5975 or equivalent Code of Practice for Falsework and BS 8110 or equivalent, Part 1:1997: Structural use of Concrete with particular reference to clause 6.9, Formwork.

4.1.2 Formwork shall be so designed and constructed that the concrete can be properly placed and thoroughly compacted and that the hardened concrete, whilst still supported by the formwork, shall comply with the required shape, position and levels subject to the tolerances and the standards of finish required by this Specification. Drawings of all formworks shall be provided by the Contractor and submitted to the Project Manager when requested.

4.1.3 Fabrication drawings of all formworks shall be provided by the Contractor and submitted to the Project Manager when requested.

4.1.4 Formwork or shuttering shall not be re-used without the prior approval of the Project Manager.

4.2 Contractor's Option to Precast

4.2.1 In addition to those sections of the Works where the Drawings indicate the use of precast construction, and provided that his proposals meet the Project Manager's approval, the Contractor may opt to precast any sections which are shown on the Drawings as in situ concrete.

4.2.2 If the Contractor wishes to exercise this option, then, following approval in principle as required above, he shall submit to the Project Manager all calculations and layout and detail drawings necessary for the manufacture and installation of the precast units and for the completion of each section of the Works to satisfy the original design requirements. All these calculations and drawings shall be approved by the Project Manager before any work is commenced on the manufacture of precast concrete units.

4.3 Sufficiency of Formwork

4.3.1 The Contractor shall be responsible for the sufficiency of all formworks, but if required by the Project Manager, he shall, before it is erected, submit details of formwork and supports he proposes to use for approval. Guidance on the loads and worst combination scenarios is given in CIRIA Report No. 13 and BS 5975:1996 or equivalent: Code of practice for Falsework.

4.4 Cleanliness of Formwork

4.4.1 Special care shall be taken to ensure the cleanliness of formwork prior to deposition of concrete. Temporary openings shall be provided in stop-ends for the removal of water and debris.

4.4.2 All re-usable formwork shall be thoroughly scraped, cleaned and, if necessary, repaired before being raised.

4.5 Ties

4.5.1 The material and positioning of any ties passing through the concrete shall be approved by the Project Manager. The whole, or part of the tie shall be capable of being removed so that no part remaining embedded in the concrete shall be nearer the surface than the specified cover to reinforcement. Any holes left after the removal of ties shall be plugged immediately with a cement mortar of the same richness using non-shrink materials.

4.6 Surface Treatment of Forms

4.6.1 The faces of the formwork in contact with the concrete shall be coated with non-staining shuttering oil or other approved material to prevent adhesion. Care shall be taken that the coating material is kept out of contact with reinforcement or embedded steelwork.

4.7 Inspection and Approval

4.7.1 All shuttering shall be inspected and approved by the Project Manager before concrete is placed within it.

4.8 Striking of Formwork

4.8.1 Minimum striking times shall be in accordance with BS 8110 or equivalent, Part 1, clause 6.9.3 with special reference to Table 6.6. or as otherwise agreed with the Project Manager. Notwithstanding any approval given by the Project Manager, the Contractor shall remain responsible for any damage arising from the removal of formwork.

4.8.2 All formwork shall be designed so that it can be removed without shock or vibration.

4.9 Retarders

4.9.1 The use of retarders on formwork shall not be permitted except with the written permission of the Project Manager.

4.10 Tolerances

4.10.1 Except where detailed elsewhere in this Specification, the tolerances on all concrete works shall be as indicated in BS 8110 or equivalent, Part 1, clause 6.11.2.

4.11 Quality of Finishes

4.11.1 The classes of the finishes required shall be as indicated on the Drawings.

4.12 Classes of Surface Finish Where Cast Against Formwork

4.12.1 Class F1

4.12.1.1 Finish for surfaces against which backfill, or other concrete is to be placed. Formwork shall consist of sawn boards, sheet metal or any other suitable material which will prevent the loss of grout when the concrete is vibrated.

4.12.2 Class F2

4.12.2.1 Finish for permanently exposed surfaces but where special finishes are not required. Formwork shall be faced with sound and plain plywood, steel panels or other suitable materials arranged in a uniform pattern. Joints in facing shall be horizontal and vertical unless otherwise directed.

4.12.2.2 On striking the formwork the surface shall be plain and smooth and shall not be treated in any way. The Project Manager may order rubbing down of any minor surface blemishes at the Contractor's expense.

4.12.3 Class F3

4.12.3.1 Finish required for permanently exposed surfaces where a high standard is of particular importance.

4.12.3.2 The formwork shall be faced with plywood or equivalent suitable material in large sheets arranged to the approval of the Project Manager in a uniform pattern. Metal panels shall not be used for F3 finishes.

4.12.3.3 Where possible, joints in sheets shall be arranged to coincide particular features or changes in the direction of the surface. All joints shall be vertical and horizontal unless otherwise directed.

4.12.4 Permanent formwork of precast slabs, natural stone, brickwork and the like shall have surface finishes of the quality shown on the Drawings. They shall be fixed to the structure by approved means and joints shall be made tight with mortar or other means of preventing grout leakage.

4.13 Classes of Surface Finish When Not Cast Against Form Work

4.13.1 Class U1

4.13.1.1 Finishing operations shall consist of compacting and tamping the concrete to the required lines and producing a uniform lightly ridged surface.

4.13.2 Class U2

4.13.2.1 Finishing operations shall consist of the above requirements for Class U1 and, after allowing the concrete surface to harden sufficiently floating the surface by hand with a wood float to produce a uniform surface free of screed marks. Care shall be taken not to work the surface more than is necessary.

4.13.3 Class U3

4.13.3.1 Finishing operations shall consist of the above requirements for Class U2 and, after allowing the concrete surface to harden sufficiently then floating the surface by power tool to produce a uniform surface free of screed marks. Care shall be taken not to work the surface more than is necessary.

4.13.4 Class U4

4.13.4.1 Non-skid surface. Finishing operations shall consist of the above requirements for class U2 using a plain wood float finish and evenly dusting the surface with carborundum grains graded between 500 microns and 3mm at the rate of 1.0 kg/sq.m of surface area before the surface of the concrete has set. The carborundum shall then be trowelled lightly into the surface.

4.14 Chamfers to Arises

4.14.1 Unless otherwise indicated on the drawings, all exposed arises shall be chamfered 25 x 25 mm.

4.15 Defective Concrete Finishes

4.15.1 Any defective concrete finish shall be rejected, and the Project Manager may order the defect(s) to be cut out and made good, all at the Contractor's expense.

4.15.2 Any proposed remedial treatment to concrete surfaces shall be submitted to the Project Manager for approval and no work shall be carried out until the approval has been obtained. This remedial treatment will be at the Contractor's expense.

4.15.3 Any concrete, the surface of which has been repaired before being inspected by the Project Manager shall be liable to rejection.

SECTION E: REINFORCEMENT FOR CONCRETE WORKS

5.1 Compliance - Sample Size and Frequency of Sampling (Where Applicable)

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

5.2 Compliance - Testing and Certification

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

5.3 General Note on European Eurocodes

5.3.1 This specification is primarily based on the provisions of BS 8110 or equivalent - Design of Concrete Structures. Alternative provisions as indicated in Eurocode 2, EN 1992 or equivalent, parts 1 to 3, are acceptable.

5.4 Reinforcing Steel - Material

5.4.1 Steel bars for the reinforcement of concrete shall comply with Regulation (EU) 305/2011 or equivalent.

5.4.2 Welded Steel fabric for the reinforcement of concrete shall comply with Regulation (EU) 305/2011 or equivalent.

5.4.3 Technical characteristics of steel bars for the reinforcement of concrete shall comply with BS 4449 or equivalent, Grade 460A or B. Steel shall preferably also be CE marked in compliance with ENV 10080, Steel for the Reinforcement of Concrete, Weldable Ribbed Reinforcement.

5.4.4 Technical characteristics of Welded Steel fabric for the reinforcement of concrete shall comply with BS 4483 or equivalent, Grade 460A or B. Steel Fabric shall preferably also be CE marked in compliance with ENV 10080, Steel for the Reinforcement of Concrete, Weldable Ribbed Reinforcement.

5.4.5 Technical characteristics of pre-stressing steels shall comply with EN 10138 or equivalent.

5.4.6 Testing of reinforcement shall comply with BS EN ISO 15630 or equivalent Parts 1 to 3: Steel for the Reinforcement and Pre-stressing of Concrete, Test Methods.

5.4.7 The manufacturer's milling identification tags are to be supplied with each consignment bundle of reinforcing steel.

5.4.8 Reinforcement which is found to have developed brittleness, cracks or other imperfections shall be rejected and removed from the site.

5.5 Reinforcing Steel Grade

5.5.1 The grade of bar reinforcement and the mesh reference shall be as indicated in the Drawings.

5.6 Reinforcement to be Clean

5.6.1 All reinforcement shall be clean and free from loose mill scale, dust, loose rust and coatings such as paint, oil etc.

5.6.2 Grit blasting may be used to remove rust, oil, grease, salt or other deleterious matter. Repeated grit blasting may be necessary where reinforcement is in final position but found on inspection to be contaminated.

5.7 Bending and Cutting

5.7.1 Bending and cutting of reinforcement shall comply with BS 8666 or equivalent. The provisions in BS 8110 or equivalent: Part1, clause 7.2 shall also apply.

5.8 Fixing of Reinforcement

5.8.1 Reinforcement shall be wired together, or otherwise effectively secured, to prevent displacement during concreting. The provisions in BS 8110 or equivalent: Part 1, clause 7.3 shall also apply.

5.8.2 Wire for binding shall be 1.63 mm annealed soft iron and the binding shall be done tightly with proper tools. Alternative methods of fixing reinforcement shall be submitted to the Project Manager for his approval. Laps and joints shall be in strict accordance to those specified in the Drawings. Any relocation and additional laps shall be approved by the Project Manager.

5.9 Cover to Reinforcement

5.9.1 Reinforcement shall, in all cases, be covered with the thickness of concrete shown on the Drawings. Accurate cover shall be secured by the use of plastic distant pieces of the correct size or other approved means.

5.10 Spacers and Chairs

5.10.1 Spacers and chairs for reinforcement shall be as shown on the Drawings and complying with BS 7973 or equivalent, Parts 1 and 2: Spacers and Chairs for Steel Reinforcement and their Specification.

5.11 Welding Reinforcement

5.11.1 Welding of reinforcement will not generally be permitted. If, in exceptional circumstances, the Contractor particularly wishes to weld reinforcement, details of the method and location shall be submitted to the Project Manager for his consideration and approval. The provisions in BS 8110 or equivalent, Part 1, clause 7.6 shall apply.

5.11.2 The design of all items such as tack-welded reinforcement assemblies shall take into account any requirements in respect of transportation including the location and fixing of lifting points to ensure safe handling.

5.11.3 The Contractor may add lengths of austenitic stainless-steel reinforcement which is to be conventionally wire tied to the detailed reinforcement, and to which he may weld for the purposes of providing adequate support for fixings during the placing of concrete. The details of such additional reinforcement must be submitted to the Project Manager for approval prior to carrying out the work.

5.11.4 In all cases, the Project Manager may require an electrically insulated material, such as plastic, to be inserted between the additional reinforcement and the detailed reinforcement in order to minimise corrosion due to stray electrical currents.

SECTION F: STRUCTURAL STEELWORKS

6.1 General

6.1.1 Steel structural works shall generally comply with the provisions contained in the UK National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002.

6.2 Information to be provided

6.2.1 When the steelwork Contractor carries out detailing of the steelwork and design and detailing of connections based on the member design prepared by the Project Manager the information indicated in Table 1.2A, Design Checklist, Section 1, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002, shall be submitted.

6.2.2 When the steelwork Contractor carries out design and detailing of the steelwork commencing with the design of the members after the conceptual layout has been prepared by the Project Manager the information indicated in Table 1.2B, Design Checklist, Section 1, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002, shall be submitted.

6.2.3 When the steelwork Contractor carries out design and detailing of the steelwork commencing with arranging the layout of the members the information indicated in Table 1.2C, Design Checklist, Section 1, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002, shall be submitted.

6.3 Information to be provided - Workmanship, Erection, Protection, Inspection, Testing

6.3.1 The information required from the Contractor in relation to the following shall be as indicated in the relevant tables, Section 1, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002:

i.	Workmanship	Table	1.3
ii.	Erection	Table	1.4
iii.	Protective Treatment	Table	1.5
iv.	Inspection and Tests	Table	1.6

6.4 Materials

6.4.1 Material shall be steel in ROLLED SECTIONS, STRUCTURAL HOLLOW SECTIONS, PLATES and BARS and shall comply with the appropriate standard as indicated in Table 2.1, Material and Dimension Standards, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002.

6.5 Materials - Testing

6.5.1 All steel shall have been specifically tested in accordance with the appropriate material quality standard as indicated in Table 2.1, Material and Dimension Standards, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002.

6.6 Test Certificates

6.6.1 The Steelwork Contractor shall have access to the manufacturer's test certificates to ensure compatibility with any welding processes being used.

6.7 Surface Condition

6.7.1 Steel surfaces when used shall not be more heavily pitted or rusted than Grade C of BS EN ISO 8501-1 or equivalent.

6.7.2 Surface defects in hot rolled sections, plates and wide flats revealed during surface preparation which are not in accordance with the requirements of BS EN 10163 or equivalent shall be rectified accordingly.

6.7.3 Surface defects in hot rolled hollow sections revealed during surface preparation which are not in accordance with the requirements of BS EN 10210-2 or equivalent shall be rectified accordingly.

6.8 Welding Consumables

6.8.1 Consumables for use in metal arc welding shall comply with BS EN 499, BS EN 440, BS EN 756 or BS EN 758 or equivalent as appropriate.

6.9 Structural Fasteners

6.9.1 Ordinary Bolt Assemblies - Ordinary Bolt and nut (and washer if used) assemblies shall be as European Standards given in Table 2.2 or the British Standards given in Table 2.3, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002.

6.9.2 Pre-loadable Bolt Assemblies - Pre-loadable HSFG bolt assemblies shall be as given in Table 2.4, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002.

6.9.3 Foundation Bolts Assemblies - Holding down bolt assemblies shall be as given in Table 2.5, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002.

6.9.4 Cup and Countersunk Bolts - Cup and countersunk bolts shall be as given in Table 2.6, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002.

6.9.5 Lock Nuts for Bolt Assemblies - Lock nuts shall be in accordance with BS 4190 or equivalent.

6.9.6 Coatings for Bolt Assemblies - Where specific coatings are required, they shall be provided by the fastener manufacturer and shall comply with the appropriate part of BS 7371 or equivalent.

6.10 Shear Studs

6.10.1 Proprietary studs used in composite construction shall be the headed type with the following properties after being formed:

(i) Minimum yield strength - 350 N/mm2

(ii) Minimum ultimate tensile strength - 450 N/mm2

(iii) Elongation of 15% on a gauge length of 5.65 A, where A is the area of the test specimen.

6.11 Protective Treatment Materials

6.11.1 Metallic Blast Cleaning Abrasives - Chilled iron grit shall be in accordance with BS EN ISO 11124-2 or equivalent and cast steel grit shall be in accordance with BS 11124-3 or equivalent.

6.11.2 Surface Coatings - Paint materials and other coatings supplied shall be in accordance with the appropriate British Standard or European Standard for the materials.

6.11.3 Sherardized Coatings - Sherardized coatings shall be in accordance with BS 4921 or equivalent.

6.11.4 Galvanizing Materials - The composition of zinc in galvanizing baths shall be in accordance with BS EN ISO 1461, Hot-dip galvanizing, Galvanizing, Metal coatings, Coatings, Zinc, Iron, Steels, Weight (mass), Homogeneity, Thickness, Adhesion tests.

6.12 Proprietary Items

6.12.1 All proprietary items shall be used in accordance with the manufacturer's recommendations and instructions.

6.13 Substitution of Material or Form

6.13.1 Material quality or form of components may, with the agreement of the Project Manager, be substituted where it can be demonstrated that the structural properties are not less suitable than the designed component and that compatibility with the intention of the design is maintained.

6.14 Information to be provided by the Contractor

6.14.1 Marking System - Every component which is to be individually assembled or erected shall be allocated an erection mark.

6.14.2 Members which are identical in all respects may have the same erection mark.

6.14.3 General Arrangement Drawings (Marking Plans) - Drawings shall be prepared by the Steelwork Contractor showing plans and elevations at a scale such that the erection marks for all members can be shown on them. The preferred scales are 1:100 or larger.

6.14.4 The drawings shall identify member size, material quality, location relative to

6.14.5 other members and the grid, and the specified surface treatment. They may

6.14.6 include a reference system to connections.

6.14.7 Details at an enlarged scale should also be made if these are necessary to show the assembly of members.

6.15 Foundation and Wall Interface Information

6.15.1 Information showing holding down bolts and the interface of steelwork components to foundations shall include a Foundation Plan showing the base location, position and orientation of columns, the marks of all columns, any other members in direct contact with the foundations, their base location and level, and the datum level.

6.15.2 Similar information shall also be provided for components connecting to walls and other concrete surfaces.

6.15.3 Complete details of fixing steel and bolts to the foundations or walls, method of adjustment and packing space shall be provided.

6.16 Fabrication Information for Components

6.16.1 Fabrication Shop Drawings or Fabrication Data used in the manufacturing

6.16.2 system need only provide details and dimensions necessary for the manufacture of components. Such details shall be available to the FTS when so requested.

6.17 Attachments to Facilitate Erection

6.17.1 Details of holes and fittings in components necessary for safety or to provide lifting and erection aids shall be included.

6.17.2 Unless specified otherwise by the Project Specification, such holes and fittings may remain on the permanent structure. Account shall be taken of this detailing the welding of temporary attachments.

6.18 Welding

6.18.1 Any requirements for edge preparations for welds shall be indicated.

6.19 Packings, Clearances and Camber

6.19.1 The Steelwork Contractor shall make provision for packings which may be necessary to ensure proper fit-up of joints, the need for clearances between the fabricated components so that the permitted deviations in fabrication and erection are not exceeded and/or the design requirements for pre-set or cambers.

6.20 Hole Sizes

6.20.1 Holes in components shall be shown in the sizes indicated in clause 3.4.5 of the National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002.

6.21 Holding Down Bolt Cover Plates

6.21.1 Holding down bolt details shall include provision of loose cover plates or

6.21.2 washers with hole diameter 3mm greater than the holding down bolts.

6.22 Connections to Allow Movement

6.22.1 Where the connection is designed to allow movement, the bolt assembly used shall remain secure without impeding the movement.

6.23 Drilling Note

6.23.1 The component information shall indicate those locations where holes are to be drilled but not punched or formed in another way (see also 4.6.4 (National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002)).

6.24 Faying Surfaces for Friction Grip Connections

6.24.1 Faying surfaces which are to receive special treatment shall be identified in the production information system.

6.25 Erection Drawings

6.25.1 When necessary to amplify the information given in his erection method statement the Steelwork Contractor shall prepare Erection Drawings.

6.25.2 On completion of the project, the Contractor shall provide the Project Manager with detailed "As Erected" drawings (including copies in electronic format).

6.26 Temporary Steel Work Drawings

6.26.1 Details and arrangements of temporary steelwork necessary for erection purposes shall be shown with the erection information.

6.27 Traceability of Steel

6.27.1 All steel to be used in The Works shall have a test certificate reference so that its properties are known and can be verified.

6.27.2 The material grade shall be identifiable within the manufacturing system.

6.27.3 Individual pieces shall be capable of positive identification at all stages of fabrication.

6.27.4 Completed components shall be marked with a durable and distinguishing erection mark in such a way as not to damage the material. Hard stamping may be used, except where otherwise specified in the Project Specification.

6.27.5 Where areas of steelwork are indicated on the drawings, or fabrication information, as being unmarked, they shall be left free of all markings and hard stamping.

6.28 Handling

6.28.1 Steelwork shall be bundled, packed, handled and transported in a safe manner so that permanent distortion does not occur, and surface damage is minimised.

6.29 Cutting and Shaping

6.29.1 Cutting and shaping of steel may be carried out by sawing, shearing, cropping, plasma cutting, laser cutting, nibbling, flame cutting, planning or machining. Hand-held cutting shall only be used where it is impractical to use machine flame cutting.

6.29.2 Flame-cut edges which are free from significant irregularities shall be accepted without further treatment except for the removal of dross, otherwise cut edges shall be dressed to remove irregularities.

6.30 Columns and Compressions Members

6.30.1 Columns and compression members with ends not in direct bearing or intended to be erected on packs or shims, shall be fabricated to the accuracy given in 7.2.2 (National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002).

6.30.2 Columns and compression members intended to be in direct bearing shall be fabricated to the accuracy given in Section 7, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002.

6.30.3 The butting surfaces of column sections which are one metre and over in width or depth and are to be in direct bearing, shall be specially prepared so that after erection both the deviation in plumb and the permitted gap as shown in Section 9, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002, are not exceeded.

6.31 Machining

6.31.1 Thickness of Machined Parts - The thickness of elements shown on the drawings as requiring machining shall mean the minimum thickness after the machining operations.

6.32 Dressing

6.32.1 Removal of Burrs - Cut edges shall be dressed to remove dross, burrs, and irregularities. Holes shall be dressed as required to remove burrs and protruding edges.

6.32.2 Dressing of Edges - Sharp edges shall be dressed, but a 90 deg rolled, cut, sheared or machined edge is acceptable without further treatment.

6.33 Holing

6.33.1 Holes - Round holes for fasteners or pins shall be drilled, punched or plasma cut.

6.33.2 Matching holes for fasteners or pins shall register with each other so that fasteners can be inserted freely through the assembled members in a direction at right angles to the faces in contact. Drifts may be used but holes shall not be distorted.

6.33.3 Drilling Through More Than One Thickness - Where the separate parts are tightly clamped together drilling shall be permitted through more than one thickness. The parts shall be separated after drilling and any burrs removed.

6.33.4 Punching full size - Full size punching of holes shall be permitted when all the following conditions are satisfied:

A. The tolerance on distortion of the punched hole does not exceed that shown in Section 7, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002;

B. The holes are free of burrs which would prevent solid seating of the parts when tightened;

C. The thickness of the material is not greater than 30mm, nor greater than the diameter of the hole being punched;

D. In spliced connections when the holes in mating surfaces are punched in the same direction and the splice plates marked to show the assembly faces, if packed separately.

6.34 Punching and Reaming

6.34.1 Punching is permitted, provided that the holes are punched at least 2mm less in diameter than the required size and the hole is reamed to the full diameter after assembly.

6.35 Slotted Holes

6.35.1 Slotted holes shall be punched, plasma cut or formed by drilling two holes and completed by cutting.

6.36 Assembly

6.36.1 Connected components shall be drawn together such that they achieve firm contact consistent with the requirements for fit-up or direct bearing.

6.36.2 Drifting of holes to align the components shall be permitted but must not cause damage or distortion to the final assembly (see 6.2.2 (National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002)).

6.37 Curving and Straightening

6.37.1 Curving or straightening components during fabrication, shall be performed by one of the following methods:

(i) mechanical means, taking care to minimise indentations, or change of cross-section;

(ii) the local application of heat, ensuring that the temperature of the metal is carefully controlled, and does not exceed 650 Deg C;

(iii) the induction bending process when the procedure used includes careful temperature control;

6.38 Storage

6.38.1 Stacking - Fabricated components which are stored prior to being transported or erected shall be stacked clear of the ground and arranged if possible so that water cannot accumulate. They shall be kept clean and supported in such a manner as to avoid permanent distortion.

6.39 Visible Markings

6.39.1 Individual components shall be stacked and marked in such a way as to ensure that they can be identified.

6.40 Workmanship - Welding

6.40.1 Welding methods shall comply with Section 6, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002.

6.41 Workmanship - Bolting

6.41.1 Bolts and bolt assemblies, including pre-loaded bolt assemblies shall comply with Section 7, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002.

6.42 Workmanship - Accuracy of Fabrication

6.42.1 Permitted deviations in cross section, length, straightness, flatness, cutting, holing and position of fittings shall be as specified in 7.2 to 7.5 of Section 7, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002.

6.43 Workmanship - Erection

6.43.1 Erection Method Statement - The Steelwork Contractor shall prepare a written detailed method statement. The Steelwork Contractor shall submit the method statement to the Engineer for acceptance at least two weeks before erection commences. Erection shall not commence before the method statement has been accepted by the Project Manager.

6.43.2 Erection of steelwork shall comply with the requirements of Section 8, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002.

6.44 Workmanship - Accuracy of Erected Steelworks

6.44.1 Permitted deviations in erected steelwork shall be as specified in 9.1 to 9.6 of Section 9, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002.

6.45 Corrosion - Categories of Risk

6.45.1 The categories of corrosivity risks shall be as indicated in EN ISO 12944 or equivalent, Part 2, Categories C1 to C5.

6.46 Corrosion - Rust Categories

6.46.1 The categories of rust shall be as indicated in ISO 8501-1 or equivalent, ranging from Class A to class D.

6.47 Protective Treatment - Surface Preparation

6.47.1 Surface Cleanliness - At the time of coating the surface cleanliness of the steelwork to be coated shall be in accordance with BS EN ISO 8501-1 or equivalent ranging from grades St (Hand and Power Tools) to Sa (Abrasive Blast Cleaning, Classes Sa1 to Sa3).

6.47.2 The preparation of steel surfaces using power tool cleaning shall be as indicated in EN ISO 8504-3 or equivalent.

6.47.3 Surface Profile - The surface profile of the steelwork to be coated shall be compatible with the coating to be applied in accordance with BS EN ISO 8503-2 or equivalent.

6.47.4 Measurement of Surface Profile - Measurement of the surface profile of steelwork to be coated shall be made using the methods given in BS EN ISO 8503-2 or equivalent.

6.47.5 Surface Defects - Surface defects revealed during surface preparation shall be dealt with in accordance with Section 2.5, Section 2, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002.

6.48 Protective Treatment - Sprayed Metal Coating

6.48.1 Zinc or aluminium sprayed coatings shall be applied to the surface as required by BS EN 22063 or equivalent to the thickness indicated in the Drawings.

6.48.2 All reinstatement of damaged coatings shall be made good to the standard of the original work.

6.48.3 Sealing Before Painting - Where a sprayed metal coating is to be overcoated subsequently, it shall be sealed before the application of the overcoating in accordance with BS EN ISO 12944-4 or equivalent.

6.49 Protective Treatment - Metallic Coatings

Note. Where higher strength steels are to be galvanized, advice on good practice to minimise the risk of cracking should be sought from a qualified metallurgist.

6.49.1 Hot dip galvanizing shall be carried out in accordance with EN ISO 1461 or equivalent. The typical coating thickness shall be 85 microns for sections not less than 6mm.

6.49.2 The Steelwork Contractor shall agree with the Engineer the position of vent and drainage holes in hollow members as laid down in BS EN ISO 14713 or equivalent, and any requirements for subsequent sealing.

6.49.3 Thermal (metal) spraying with either zinc or aluminium shall comply with EN 22063 or equivalent. Typical coating thickness is 150 - 200 microns for aluminium and 100 - 150 microns for zinc.

6.50 Protective Treatment - Paint Coatings

6.50.1 Surface Preparation Prior to Painting - Steelwork shall be prepared for coating in accordance with clause 10.2, Section 10, National Structural Steelwork Specifications for Building Construction, 4th Edition, 2002.

6.50.2 Painting of Site Weld Areas and Fasteners - Site weld areas and fasteners which are not suitably protected shall be painted with an approved paint system to ensure similar properties, performance and compatibility with the protective treatment system being used on the surrounding surfaces.

6.50.3 Fasteners and bolt assemblies which are supplied with a protective treatment which is equivalent to the protective treatment on the steelwork need not be painted.

6.50.4 The paint coating shall normally consist of 5 in number layers:

Primer Coat	Zinc rich Epoxy
Sealer	Epoxy
Undercoat	Epoxy MIO
Intermediate	Epoxy
Finish	Acrylic Urethane

6.51 Protective Treatment - Paint Types

6.51.1 The following types may be used as indicated in the Drawings or Bills of Quantities:

6.51.1.1 Air Drying Paints: E.g. Alkyds

6.51.1.2 One pack Chemical Resistant paint: E.g. Acrylated rubbers, Vinyl

6.51.1.3 Two pack Chemical Resistant paints: E.g. Epoxy, urethane

6.51.1.4 Prefabrication primers: E.g. Etch, Epoxy, Zinc Epoxy, Zinc Silicate

6.52 Thin Film intumescent Coating for Steel Elements

6.52.1 Steel elements shall be protected by intumescent paint to ensure a fire resistance of 60mins.

6.52.2 The thin film intumescent coatings shall be paint-like materials which are inert at low temperatures, but which provide insulation as a result of a complex chemical reaction at temperatures of approximately 200-250°C, a threshold temperature at which the properties of steel are still unaffected. As the coating reacts, it swells to provide an expanded layer of low conductivity char that insulates the steel section. Typical expansion ratios shall be about 50:1.

6.52.3 Application shall be carried out in situ and the surface finish and colour shall be coordinated with the Architect. This thin intumescent film shall easily cover complex shapes and post-protection service installation shall be relatively simple.

6.52.4 The specification and on-site application shall follow, ASFP Technical Guidance Document - TGD 11. Code of practice for the specification and on-site installation of intumescent coatings for fire protection of structural steelwork. The requirements of each proprietary system are presented separately for open sections (UKB/UKCs) and for closed sections (Celsius). They can be found either in manufacturer's literature or in the ASFP's Yellow Book.

6.53 Coating of Surfaces to be encased in Concrete

6.53.1 Structural steel surfaces to be encased in concrete may be left unpainted and need not be blast-cleaned unless instructed otherwise by the Project Manager.

6.54 Weathering Steels

6.54.1 Structural weathering steel shall comply with EN 10 155 or equivalent.

SECTION G: MECHANICAL WORKS

7.1 General

Works shall include the supply, installation, testing and commissioning of:

i. To supply, install, test and commission water lifting sump pump complete with control panel, pump retrieval kit and discharge pipe work from the pit to the reservoir, as shown on the tender drawings.

ii. To supply, install and test a bowser filling point complete with bowser connections, necessary stand-alone support and pipe work from the bowser connection to the reservoir, as shown on the tender drawings.

iii. To supply, install, test and commission a portable diesel driven pump complete with the necessary pipe work to fill in the water ponds using sea water.

iv. To supply, install and test a gravity-fed water distribution pipe work complete with the necessary puddle flange, isolating valves, pipework, etc. to fill-in the water ponds from the reservoir, as shown on the tender drawings.

7.2 Pipes

7.2.1 When installing pipes, proper measures shall be taken to prevent the tubes from getting contaminated or moistened. The end of each length of pipe shall be covered. Special care shall be taken to avoid the ingress of dirt when passing pipes through a hole. Before carrying out any pressure tests the pipework system shall be flushed systematically as recommended by the manufacturer with water. This operation shall be carried out until all pipes are clean. Pressure should be increased to a maximum value as indicated by the manufacturer and kept for 24 hours.

7.2.2 Pipes shall be securely bracketed at intervals according to the Manufacturer's instructions. All pipe work shall be supported by means of split-type galvanized steel brackets, incorporating a rubber insertion around the whole of the circumference. The bracket itself shall be supported by a single stud, bolted to a proprietary galvanized steel U channel which shall allow the stud to slide sideways during installation, and thereby achieve a neat finish. For horizontal runs at roof level, the U channel sections shall be anchored down to specifically made concrete slabs laid on the roof. The cost of slabs and U channel brackets shall be deemed to have been included in the tendered rate for the pipes.

7.3 Pipe sizes

7.3.1 Pipe sizes referred to in these documents refer all to the internal clear bore diameter.

7.4 Neatness of installation

7.4.1 The installation is required to be neat, linear, level, orderly and have a good visible surface finish.

7.5 Painting

7.5.1 All rusted metal surfaces shall be wire-brushed down to bare metal and shall not be painted prior to the approval of the Engineer. All painted surfaces which are meant to remain exposed, shall be given a coat of primer and two final coats of high gloss enamel paint of approved colour. All galvanised metal surfaces shall be given adequate coats of etching primer and two final coats of high gloss enamel paint of an approved colour.

7.6 Electrical Equipotential Bonding

7.6.1 All earthing requirements shall comply with the latest Edition of the I.E.E. regulations, and current Enemalta requirements. All copper earthing material shall be BS approved and intended for use in earthing installations.

7.6.2 In particular, all mechanical equipment and fluid conveying systems shall be earthed by means of earth wiring in order to ensure continuity between sections such as between motor anti-vibration mountings and supporting frames, between supporting structures with rubberized footings and earth itself.

7.7 Fixing to the Building Structure

7.7.1 Light fixings to brick, concrete or other masonry materials shall be by correctly sized screws fitted into plastic or metal expanding plugs located in correctly sized holes drilled in the structure. Light fittings to cavity constructions shall be gravity or spring toggles or expanding rubber sleeve fitted on to screws.

7.7.2 All holes shall be carefully drilled by slow speed rotary drills as recommended by the manufacturer of the fixing devices. Percussion type boring devices and shot fired fixings shall not be used without prior approval in writing by the Site Project Manager.

7.7.3 Where fittings to steelworks are required, they shall be by the use of metal clamps/ hook bolts or similar devices where the method of fixing does not require any drilling or cutting of the steelworks. Under no circumstances should structural steelworks be cut or drilled, without the written approval of the Architect.

7.7.4 In all cases, the particular type and size of fixing devise used shall be in accordance with the manufacturers' recommendations having regard to the application and the load to be carried by the fixing device. Any drilling and making of screwed or bolted fixings to the structure shall be included in the tender. Proposals for fixings shall be discussed with and approved by the Engineer and any possible restrictions shall be ascertained before submission of the tender.

7.8 CE Certification

7.8.1 Conformance: All installation material and equipment shall have CE certification of conformity with EU consumer safety, health or environmental requirements.

7.9 Labelling

7.9.1 Labelling shall be indelible and typically comprising of a three-ply rigid plastic tag of the "traffolyte" type. Lettering shall be at least 6mm high and shall have a clearly identifiable and uniform font. Lettering shall typically be engraved in the top layer to expose the middle plastic layer of different colour (white/ black/ white) for non-safety critical items, (red/ yellow/ red) for safety critical items.

7.10 Testing and Commissioning

7.10.1 The contractor has to balance, test and commission the systems in such a manner so as to demonstrate the operation and performance of all systems and equipment as intended and at the specified conditions and loads. Unless otherwise stated elsewhere in these documents, all commissioning shall be to C.I.B.S.E. and B.S.R.I.A. guidelines or approved equivalent.

7.10.2 The Contractor shall be responsible to provide all test points, test instruments and any related equipment for carrying out such tests, even if such requirements are not detailed and specified elsewhere on these documents.

7.10.3 The Contractor shall provide the Engineer with all certified performance characteristics and test data for all of the functional equipment.

7.10.4 Under no circumstances shall piping be buried or insulated before tests have been carried out to the satisfaction of the Engineer and before the Engineer has authorized the contractor to do so.

7.11 Record Drawings and Manuals

7.11.1 The contractor shall provide drawings to the scales not less than those used for tendering purposes. These drawings shall show plans and such sections as the engineer may consider necessary to show all required information clearly.

7.11.2 All the foregoing drawings shall be specially prepared, and the final copies shall consist of one negative and three prints of each drawing. The final 'as fitted' drawings shall be submitted to the engineer within three weeks from the date of handing over of the installation.

7.11.3 Technical manuals for each item of equipment shall be submitted to the Engineer together with the drawings and at the same time. These shall be comprehensive and shall include spares ordering information. Sales brochures shall not be accepted in this respect.

7.12 Warranty

7.12.1 The contractor shall provide a warranty agreeing to repair, restore or replace defects in work, materials and workmanship not due to ordinary wear and tear or improper use or care for 24 months from the date of the take-over certificate, which shall be issued by the consulting engineer after completion of the scope of works of the whole tender. This warranty needs to also cover for an additional 24 months any parts or equipment replaced in the initial 24 months' warranty.

7.13 Certifications

7.13.1 All items which are required to be certified by Law or by any Legal Notice are to be certified by a Warranted Engineer/s competent in the field of certification. Such certification is to be forwarded to the Engineer with other contract drawings and information.

7.14 Verification

7.14.1 Where the listed criteria for a product are included in a relevant harmonised European standard, under the Construction Products Directive (89/10/EEC) or equivalent, for CE marking, the supplier must provide the information accompanying the required CE marking to demonstrate compliance with the listed criteria. Where the listed criteria for a product are not included in the accompanying information to CE marking under the Construction Products Directive (89/10/EEC) or equivalent, products holding a relevant Type 1 ecolabel fulfilling the listed criteria will be deemed to comply. Other appropriate means of proof or a signed declaration will also be accepted.

The bidder must provide appropriate proof that this criterion is met. Certifications and verifications regarding products must be part of the tenderer's scope of work. The tenderer must be aware that such documents must be part of the certifications.

SECTION H: PLUMBING WORKS

8.1 High-Density Polyethylene (HDPE) PE100 Pipes

<table>
<tr><td>Material / range</td><td>Polyethylene Grade: PE100 fusion welded pipework suitable for cold-water applications.

Pipes shall be certified from the manufacturer to be suitable for the lifetimes according to the following schedules:
<table>
<tr><th>Application</th><th>Lifetime. (years)</th><th>Temp. (°C)</th><th>Pressure (bar)</th></tr>
<tr><td>Cold water</td><td>50</td><td>40</td><td>12</td></tr>
</table>
All pipework installed above ground externally, including in shafts shall be covered / painted for UV-protection.

Note: Pipe sizes shown in the drawings are clear bore internal diameter</td></tr>
<tr><td>Standards and Approvals</td><td>• BS EN 12201-3.
• WRAS approved materials.</td></tr>
<tr><td>Jointing methods</td><td>• Butt Fusion
• Electrofusion</td></tr>
<tr><td>Identification</td><td>Label as follows:
• Bowser fill
• Rain water fill

All pipe work labelling shall include flow directional arrows.</td></tr>
<tr><td>Installation considerations</td><td>• Environmental Conditions: Ensure the working temperature is within the specified range for both pipes and fittings.
• Equipment: Use calibrated and well-maintained fusion equipment.
• Training: Operators should be trained and certified in fusion techniques.
• Quality Control: Implement procedures for inspecting joints, including visual inspection and, where applicable, non-destructive testing.

Adhering to these considerations ensures a reliable and long-lasting piping system.
For detailed requirements and guidelines, refer to the manufacturer's documentation and relevant industry standards.</td></tr>
<tr><td>Testing</td><td>Test for 4hrs at 1.5 times working pressure. Engineer to certify.</td></tr>
<tr><td>Supports</td><td>Use proprietary pipe support systems, at the distances/ frequency specified by manufacturers. Take note of reaction static & dynamic forces, dead weight load. Ensure joints are not under bending stress. Use fixings supplied by manufacturer.</td></tr>
<tr><td>Coordination</td><td>Coordinate routes with other services, install pipelines in parallel and neatly together.</td></tr>
</table>

All installation must be certified by the pipe manufacturer to be guaranteed for a period of 20 years.

8.2 Sump Pump In Pit - Ref: SP-P01

The sump pump in pit (SP-P01) consists of one in number submersible pump, installed in the designated underground pit, and shall pump rainwater collected in the pit from the adjacent road to top-up the reservoir, for filling the water ponds. SP-P01 shall have the following specifications.

Type:	Submersible pump with single impeller with twin mechanical seal with oil chamber to protect against dry running. Suitable to pump clean and dirty water containing solids up to 10mm grain size. The pump shall include a control panel as specified below. Note: Suitable to pump clean and dirty water containing solids up to a 10mm minimum grain size. Insulation class: F Protection: IP68 (for continuous immersion in water) Manufacturer to include manuals, etc.
Construction material:	• Pump jacket: Cr-Ni steel 1.4301 EN 10088 (AISI 304) or equivalent • Handle: Polypropylene (with frame in AISI 304) or equivalent Pump Casing: Cast iron GJL 200 EN 1561 or Cr-Ni steel 1.4301 EN 10088 (AISI 304) or equivalent - both options acceptable • Casing Cover: Cr-Ni steel 1.4301 EN 10088 (AISI 304) or equivalent • Impeller: Cast iron GJL 200 EN 1561 or Cr-Ni steel 1.4301 EN 10088 (AISI 304) or equivalent - both options acceptable • Motor jacket: Cr-Ni steel 1.4301 EN 10088 (AISI 304) or equivalent • Filter: Cr-Ni steel 1.4301 EN 10088 (AISI 304) or equivalent
Pump performance:	6 l/s at 15m head (expected power 1.5kW x 1phase)
Warranty:	24 months
Controls:	Pumps must operate in standalone (automatic) mode, with a selection switch on the control panel. The control panel shall include: • IP 65 rated enclosure • Pump starter, with overload protection, • Main isolating switch, • RUN/TRIP LED indication, • ON-OFF-AUTO - manual selector switch, • 2 no level float switches to the cut in and cut-out level sensors inside the reservoir • All relevant internal wiring, ancillaries for a complete functional system.
Ancillaries for pump:	• Retrieval 316 marine grade stainless steel: chain, hooks and shackles for lifting of pump. • IP65 rated enclosure control panel

The plumbing contractor must liaise with the electrical contractor re isolation switch location and fuse size.

8.3 Portable Diesel Pump- Ref: DP-P01

The portable diesel pump (DP-P01) must consist of a water pump suitable for sea water applications, to be driven by a diesel engine, and should be supplied complete with pump, engine, fuel tank, battery for electric start, etc. all assembled on a common compact frame with wheels for easy transportation.

DP-P01 shall have the following specifications.

Type:	Portable diesel driven water pump suitable for sea water applications, to be driven by a diesel engine, and should be supplied complete with pump, engine, fuel tank, battery for electric start, as per below specifications. The pump must be of self-priming capability. The requested portable pump must all be assembled on a durable common compact frame with handles and wheels for easy transportation and anti-vibration platform on engine to reduce vibration and noise. Note: Suitable for sea water with slightly muddy and sandy water. CE marked Manufacturer to include manuals, etc.
Construction material:	• Pump Casing & Impeller: Must be corrosion-resistant materials like stainless steel, or bronze. Alternative material with specific material to withstand seawater corrosion are also considered. • Shaft Material: Stainless steel or another corrosion-resistant material to avoid pitting and rusting. • Seals: Mechanical seals should be suitable for seawater to prevent leakage and degradation over time.
Engine Specifications:	• Type: Diesel-powered, 4 stroke - air-cooled or water-cooled engine. • Fuel Tank Capacity: To provide continuous operation time of 8 hours in full pumping capacity, not less than 13 liters capacity. • Diesel engine emissions: Compliant with EU Stage-V or better • Staring: Both an electric start complete with battery and also complete with recoil start lever for an easy-to start pull option.
Corrosion Resistance:	• Protective Coatings: Anti-corrosive coatings or anodized finishes. • Sacrificial Anodes: To include sacrificial anodes to protect against galvanic corrosion.
Pump performance:	9 l/s at 10m head (expected engine displacement 435cc)
Warranty:	24 months
Ancillaries for pump:	• Trash strainer, manufactured in stainless steel suitable for sea water. • Hose coupling set for both suction and discharge ports, complete with O-rings, hose coupling sets and hose bands. • Suction and discharge ports 100mm • Battery for electric start • Speed control lever for adjusting the pump's discharge rate volume • electric start • recoil start lever • fuel tank • durable common compact frame with handles and wheels • anti-vibration platform on engine

8.4 VALVES AND ACCESSORIES

All isolation valves and fittings are to be of the gate type and/or butterfly type, complete with flanged ends or union ends for easily dismantling without cutting the pipes. All valves to be installed must meet European standards for reliability, durability, and ease of use in underground applications, with accessible operation from above ground.

The isolation valves to be used for underground application, are to be manufactured as follow:

8.4.1 Valve Type and Design

8.4.1.1 Valve Type: Gate valve, resilient seated for optimal sealing and corrosion resistance.
8.4.1.2 Design Standard: Should conform to EN 1074-1 & EN 1074-2 or equivalent for underground gate valves used in water supply systems.
8.4.1.3 Operation: Manual operation with an extended non-rising stem, designed for underground use with remote actuation from above ground.
8.4.1.4 Stem Extension: Adjustable stem extension for ease of operation from the ground level, eliminating the need to enter a manhole.

8.4.2 Material Composition

8.4.2.1 Body and Bonnet: HDPE or Ductile iron (typically EN-GJS-500-7 or equivalent), which offers durability and high strength for underground installations.
8.4.2.2 Stem Material: Stainless steel, typically grade AISI 316, to provide resistance to corrosion in underground and moist environments.
8.4.2.3 Seat Material: EPDM rubber for water-tight sealing, in compliance with WRAS or ACS standards for potable water if applicable.
8.4.2.4 Coating: Fusion-bonded epoxy coating (minimum 250 microns thick) in compliance with EN 14901 or equivalent for corrosion protection.

8.4.3 End Connections

8.4.3.1 Flanged Connections: Flanges according to EN 1092-2 or equivalent (PN10 or PN16) for easy dismantling and maintenance.
8.4.3.2 Flange Drilling: Should match European PN flange standards for compatibility with common piping systems.
8.4.3.3 Gasket Material: Compatible gasket material for flanged connections, designed for easy disassembly and reassembly during maintenance.

8.4.4 Pressure and Temperature Ratings

8.4.4.1 Pressure Rating: PN10 or PN16, depending on system requirements and specifications.
8.4.4.2 Temperature Range: Typically, from -10°C to +70°C for cold water applications.

8.4.5 Extended Stem and Operation Features

8.4.5.1 Extended Stem: The stem should be extendable to match the depth of burial, with a protective cover or sleeve to prevent soil and moisture ingress.
8.4.5.2 Operation from Above Ground: Equipped with a surface-level operating cap or T-key slot, allowing operation without manhole access.
8.4.5.3 Stem Protection Sleeve: HDPE or coated steel to protect the extended stem from corrosion and soil infiltration.
8.4.5.4 Visual Position Indicator: Optional feature to show valve status (open/closed) from above ground.

8.4.6 Sealing and Leakage Prevention

8.4.6.1 Seals: Double O-ring seals in the stem to prevent water ingress into the valve, even at high pressure.
8.4.6.2 Bonnet Gasket: Made of resilient materials, usually EPDM, to ensure a leak-proof seal between the body and bonnet.
8.4.6.3 Stuffing Box: For valves where additional sealing is required, a stuffing box with adjustable packing may be used.

8.4.7 Optional Features

8.4.7.1 Ground-Level Key Lock: Option to secure the valve from unauthorized operation.
8.4.7.2 Protection Cap: Protective cap for the operating head, shielding it from dirt, debris, and accidental operation.

8.4.7.3 Drainage Option: Optional drainage ports to allow for removal of accumulated water around the valve if required by site conditions.

8.4.8 Compliance and Standards

8.4.8.1 European Standards Compliance: Must comply with EN 1074-1 & EN 1074-2 or equivalent for isolating valves, EN 1171 or equivalent for ductile iron gate valves, and EN 558 or equivalent for face-to-face dimensions.

8.4.8.2 WRAS/ACS Certification: Required if the valve is used in potable water systems, indicating compliance with health and safety standards.

8.4.8.3 Leakage Class: Typically, Class A leakage according to EN 12266-1 or equivalent, indicating zero leakage across the valve in a closed position.

8.4.9 Installation Considerations

8.4.9.1 Corrosion Protection: The valve should be compatible with additional protective measures, like sacrificial anodes or cathodic protection, for highly corrosive soils.

8.4.9.2 Buried Service Identification: Markings and a distinctive coating colour for easy identification of buried valve locations.

8.4.9.3 Extended Stem Adjustability: Should allow for field adjustments to fit variable burial depths, with standardized length options for different depths.

8.5 Underground Reservoir Content Gauge

8.5.1 The reservoir shall have a content gauge installed on top of the reservoir, to determine the water level content inside the reservoir.

8.5.2 The contents gauge shall include a mechanical means of allowing the operator to verify the contents of the reservoir against a calibrated scale. Acceptable scales can be either a scale rule, or a dial contents gauge. Acceptable gauging mechanisms shall be either via a mechanical float with rod and pulleys, or otherwise.

Materials shall be non-corrosive, with the scales being indelible from the action of corrosion.

8.6 Workmanship for Installation, Testing and Commissioning

8.6.1 All pipe work and equipment are to be installed in accordance with manufacturer's recommendations. All work must be carried out by a competent person certified in the trade according to Local Maltese regulations. Installation is to be in accordance with BS 6891 or equivalent.

8.6.2 The Contractor shall provide without extra charge, all labour and equipment required by the Engineer in Charge for testing and measuring the works and weighing, measuring, or testing the efficiency of any portion or portions of the completed work.

8.6.3 All installation and testing procedures shall comply and be carried out in accordance with the following standards specifically the sections relevant to this project:

- BSRIA AG 1/2001.1 (2004): "Pre-commissioning cleaning of pipework systems
- BSRIA BG 2/2010P: "Commissioning water systems - Pro formas"
- BSRIA BG 1/2007CD: "Handover, O&M Manuals, and Project Feedback Electronic Forms"
- BSRIA BG 2/2010: "Commissioning Water Systems"

A copy of the above guidelines is to be made available on-site for quick reference by the foreman and quality assurance manager in charge. Adequate records and proof of carrying out the procedures described in the above shall be provided, and these are to be certified by the contractor's quality assurance warranted mechanical engineer. The quality assurance mechanical engineer shall be required to be present on site throughout the execution of all these tests to ascertain fulfillment of these requirements.

8.7 Pressure testing

8.7.1 Pressure test all piped systems before any permanent covering or insulation is applied to the pipe. Provide sufficient blanked connections during installation for the purpose of pressure testing. Keep adequate records of all tests, which must include the date the test was carried out, section of pipe tested on drawings, test pressure, duration and result of test, provide test records with O&M Manuals

8.7.2 Water circulating systems must be pressure tested for one hour at 1½ times the maximum pressure of the pump operating at zero flow and furthermore to the pressure test required by the pipe and valve manufacturer and HVCA guide TR6.

8.7.3 Underground pipework must be tested to a gauge pressure not less than twice the operating pressure for 1 hour and furthermore to the pressure test required by the pipe and valve manufacturer and HVCA guide TR6.

8.8 Pipe cleaning

8.8.1 All water installations shall be flushed out with fresh clean water after pressure testing. Isolate all filters, pumps, meters and any other item that can be damaged by the cleaning operation, provide connecting tees to allow connecting up with a suitably sized flushing pump, capable of achieving the pipe velocities required in the BSRIA guidelines.

8.8.2 Repeatedly sterilize and flush cold-water services for domestic use after commissioning utilising a sterile chlorine-based solution or any other solution as approved by the manufacturers of the items that will be in fluidic contact with the water distribution system; flushing is to be done with mains water.

8.8.3 The sterilization and flushing shall continue till the water in five different sampling point per system (mains water, first class water, domestic hot water) shall be of an acceptable low turbidity and free of bacteriological contamination. A copy of the positive certificates is to be annexed to the O&M manuals. Certificates are to be produced from an accredited laboratory.

8.5 Operating and maintenance instructions

8.9.1 On completion of all works and prior to handing over, the Contractor shall provide two copies of Operating and Maintenance Instructions, which shall be enclosed in durable covers. The Operating and Maintenance Instructions shall include the following:

8.9.2 General description of the installation, indicating the manner of working of each system, forming part of the works.

8.9.3 Full instructions for starting up, operating and shutting down each individual assembly of equipment.

8.9.4 Instructions on how to operate equipment and/ or installation, noting any safety and/ or sequencing arrangements.

8.9.5 Instructions as to the frequency and full requirements of routine and regular preventive maintenance necessary to maintain the equipment in a good working condition. This information is to be supplemented by the Manufacturer's Maintenance Instructions for all equipment.

8.9.6 A recommended spare parts list detailing each part numbered of all equipment supplied as indicated by the manufacturer, and also including current price of each part, the manufacturer's address and local stockiest / agent.

8.9.7 Details of each item of equipment including the name and address of the manufacturer, type, model, serial number, duty and rating.

8.9.8 The Operating and Maintenance Instruction shall be handed to the Engineer/ Clients representative not later than at the end of the commissioning period.

8.9.9 Wiring diagram of the system and equipment.

8.9.10 Two sets of "as fitted" drawings in hard copy and one electronic copy in CAD and PDF.

8.10 Submissions

8.10.1 At the commissioning stage the Contractor shall supply the following operation and maintenance data:

i. Installation manuals
ii. Operation and maintenance instructions manuals.
iii. Emergency procedures manual
iv. Parts list, with an itemized price list of recommended parts inventory.

8.10.2 Within a week of the certification, the Contractor is expected to submit the testing and commissioning certificates relating to putting the system into service. Such documents must be part of the final certifications and must be made available at the time of commissioning.

SECTION I: SUPPLY AND INSTALLATION OF POND LINER UNDERLAY

9.1 General Requirements

9.1.1 The contractor shall supply and install a heavy-duty pond liner underlay (pond fleece) as per the specifications outlined below.

9.1.2 The underlay material shall be a non-woven geotextile fabric with enhanced strength and durability, suitable for providing protection to the pond liner against punctures and abrasions.

9.1.3 The installation shall be carried out in accordance with best industry practices to ensure longevity and performance of the pond liner system.

9.2 Material Specifications

9.2.1 Material Type: Heavy-duty non-woven geotextile fabric.

9.2.2 Weight: 250 g/m² (grams per square meter).

9.2.3 Composition: High-quality polypropylene or polyester fibers, needle-punched for superior strength and flexibility.

9.2.4 Thickness: Adequate to provide cushioning and prevent damage from sharp objects, roots, or uneven substrate.

9.2.5 Permeability: Water-permeable to allow for proper drainage and prevent waterlogging under the liner.

9.2.6 UV Resistance: Treated to resist degradation from sunlight exposure.

9.3 Installation Specifications

9.3.1 Site Preparation:

9.3.1.1 The pond excavation area shall be cleared of sharp stones, roots, and debris to create a smooth substrate.

9.3.1.2 The surface shall be levelled and compacted where necessary.

9.3.2 Underlay Laying Process:

9.3.2.1 The underlay shall be laid uniformly across the entire excavation, ensuring complete coverage of the base and sides of the pond.

9.3.2.2 Adjacent sheets of underlay shall overlap by 150-200 mm to provide continuous protection.

9.3.2.3 The underlay shall be free from folds or excessive wrinkles to maintain uniform coverage.

9.3.3 Edging and Securing:

9.3.3.1 The underlay shall be extended into the edging trench along the pond perimeter to ensure a secure and stable installation.

9.3.3.2 The underlay shall be pinned or weighted down temporarily during liner installation to prevent movement.

9.3.3.3 Once the liner is installed, the underlay edges shall be securely buried in the trench along with the liner to prevent shifting.

9.3.4 Final Inspection:

9.3.4.1 The underlay shall be inspected for any gaps, improper overlaps, or exposure before placing the liner.

9.3.4.2 Any adjustments shall be made to ensure complete protection of the liner.

9.4 Quality Control and Compliance

9.4.1 The supplied material shall comply with relevant industry standards for geotextile underlays.

9.4.2 The installation shall be subject to an inspection by the project supervisor to confirm adherence to specifications.

9.4.3 Any deviations or defects identified shall be rectified prior to proceeding with the pond liner installation.

9.5 Safety and Environmental Considerations

9.5.1 Proper handling of underlay material shall be ensured to avoid contamination or damage before installation.

9.5.2 Waste materials shall be disposed of responsibly, ensuring minimal environmental impact.

9.5.3 The installation team shall adhere to safety regulations to prevent injuries or accidents during the process.

SECTION J: SUPPLY AND INSTALLATION OF REINFORCED POLYETHYLENE (RPE) LINER

10.1 General Requirements

10.1.1 Scope of Work This specification covers the supply, handling, transportation, storage, and installation of a laminated, UV-protected Reinforced Polyethylene (RPE) Liner. The liner shall have a minimum thickness of 24 to 30 mils (0.6096mm - 0.762mm) and be UV resistant, with a minimum guarantee of 15 years. All seams shall be hot-welded using wedge welders in accordance with the manufacturer's recommendations.

10.1.2 Standards and References The installation and materials shall conform to the latest applicable industry standards, including but not limited to:

- ASTM D4437 or equivalent - Standard Practice for Determining the Integrity of Field Seams
- ASTM D5994 or equivalent - Test Method for Measuring Core Thickness of Textured Geomembranes
- ASTM D751 or equivalent - Standard Test Methods for Coated Fabrics
- GRI-GM19 or equivalent - Guide for the Installation of Geomembranes
- Manufacturer's guidelines and best practices

10.2 Material Specifications

10.2.1 Reinforced Polyethylene Liner

- Material: Reinforced Polyethylene (RPE), laminated and UV-protected
- Thickness: Minimum of 24 to 30 mils (0.6096mm - 0.762mm)
- UV Resistance: Minimum guarantee of 15 years against UV degradation
- Tensile Strength: Minimum 100 lbs/in (ASTM D882) or equivalent
- Puncture Resistance: Minimum 300 lbs (ASTM D4833) or equivalent
- Tear Resistance: Minimum 40 lbs (ASTM D1004) or equivalent
- Seam Strength: Minimum 80% of the parent material (ASTM D4437) or equivalent
- Chemical Resistance: Resistant to hydrocarbons, acids, and alkalis

10.2.2 Welding Equipment

- Hot Wedge Welder: Hand-held device capable of heating the liner to the required temperature and applying compression to achieve molecular bonding.
- Overlap: Minimum of 12 inches (250mm) or as stipulated by the manufacturer.
- Field Seam Testing: Non-destructive testing methods such as air channel testing, vacuum testing, or ultrasonic testing to verify seam integrity.

10.3 Installation Procedure

10.3.1 Site Preparation

- The subgrade shall be free of debris, sharp objects, roots, and other materials that may damage the liner.
- The surface shall be compacted to achieve a firm and smooth substrate.
- Any irregularities exceeding 1 inch (25mm) shall be levelled.

10.3.2 Liner Deployment

- The liner shall be carefully unrolled and placed without excessive stretching or wrinkling.
- Anchor trenches shall be excavated and lined according to the approved design.
- Panels shall be arranged to minimize field seams and optimize material usage.

10.3.3 Welding and Seam Preparation

- Overlaps shall be a minimum of 12 inches (250mm) or as specified by the manufacturer.
- Welding shall be performed using hot wedge welders.
- Seams shall be inspected visually and mechanically tested to ensure continuous bonding.
- Destructive testing shall be conducted at intervals to verify seam strength.

10.3.4 Quality Assurance and Testing

- All seams shall undergo non-destructive testing.
- Destructive seam samples shall be tested per ASTM D6392 or equivalent.
- The entire liner shall be visually inspected for defects, punctures, and improper seams
- The pond liner shall be tested by filling the pond with water and the level of water monitored for any possible leaks. Remedial action would be required in case the RPE pond liner doesn't hold water before further works could proceed on the pond.

10.4 Final Acceptance

10.4.1 Documentation

- The contractor shall submit material certificates, test reports, and as-built drawings.
- A warranty document guaranteeing material integrity for a minimum of 15 years shall be provided.

10.4.2 Approval and Handover

- The installation shall be reviewed and approved by the supervising engineer before final acceptance.
- Any defects or non-conforming areas shall be rectified before project closeout.

SECTION 4 - SUPPLEMENTARY DOCUMENTATION

4.1 - Draft Contract Form

4.2 - Specimen Performance Guarantee

4.3 - Specimen Tender Guarantee (Bid Bond) - where applicable

4.4 - Specimen Pre-Financing Guarantee - where applicable

4.5 - Specimen Retention Guarantee - where applicable

4.6 - Ultimate Beneficiary Owner (UBO) form

These are available to view and download from the 'Resources Section' at: www.etenders.gov.mt.

4.7 - General Conditions of Contract

The full set of General Conditions for Works Contracts (Version 4.8) can be viewed/downloaded from the 'Resources Section' at: www.etenders.gov.mt

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.

4.8 - General Rules Governing Tendering

The contents of this procurement document complement the latest version of the General Rules Governing Tenders applicable on the date of the publication of this tender, the Terms of Use and the Manual for Economic Operators applicable to Government's e-Procurement Platform (available from the Resources section of www.etenders.gov.mt).

TENDERER'S TECHNICAL OFFER

CT3029/2026

N.B. The Key Experts Form (including Self-declaration form for Key Experts and the Statement re Availability), CVs and Literature List are subject to Note 2. Any other components of the technical offer are under Note 3.

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

A technical offer is to be provided by the Economic Operator in response to Technical Specifications. The submission shall be in a structured form and is to be in the same sequence as listed hereunder for ease of reference and evaluation.

The Technical Offer shall constitute the following:

a) An indicative Work-Plan/Programme of Works (Gantt Chart) in relation to the completion period (total of 45 weeks for completion of works). This shall incorporate all the different tasks in the Bills of Quantities including mobilisation of works, completion, commissioning and handing over of the works.

b) A Graphic Work Schedule (Gantt Chart) in relation to the 24-month period allowed as Execution of the Contract under Article 32 of the Special Conditions.

c) A general plan outlining how the bidder shall ensure environmental controls or the General Environmental Plan in line with Article XX of the Special Conditions.

d) A description of any quality assurance system/s detailing what would be available for ensuring the successful completion of the works. (if applicable)

e) Accommodation for the Supervisor - The economic operator is to provide sketches and data detailing the characteristics of the accommodation and facilities intended to be provided. State the proposed location of your main office on the site, stations (steel/concrete/asphalt structures), warehouses, laboratories, accommodation, etc. (The site office proposed must meet the requirements specified in the technical specifications)

f) **Key Experts Form,** the Statement of Availability Form, the Self-declaration form for Key Experts (relating to public employees) and CVs *(Note 2)*

Key Expert No. 1 - Architect and Civil Engineer (Perit) / Project Manager
Key Expert No. 2 - Site Technical Officer
Key Expert No. 3 - Project Supervisor for Occupational Health and Safety

TECHNICAL OFFER QUESTIONNAIRE *(Note 3)*

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

Bidders must include this form as their technical offer. This form is to be submitted online through the prescribed tender response format and by using the Tender Preparation Tool provided.

The technical offer falls under Note 3, thus, the information/technical specifications provided in the below table shall not be subject to rectifications. Therefore, bidders that fail to complete in full, submit and upload the requested information will be deemed as non-compliant and will result in disqualification of their offer.

It is to be noted that the manufacturer/brand and model/catalogue number cannot be changed at any stage (during and after evaluation of the offer).

The items being offered in the technical offer must be in conformity with the specifications requested under Section 3 - Technical Specifications and/or the Bills of Quantities and/or any Drawings issued.

Description	Please mark each item as confirmed where applicable
I declare that I have read and understood the requirements and specifications outlined in Section 2 - Special Conditions and in Section 3 - Technical Specifications of the Tender Document.	I confirm ☒

Item No.	Description	Reference in Technical Specifications (Section 3)	Please mark each item as confirmed where applicable. All fields shall be filled in otherwise the technical offer will not be considered further

Task 1	Earth Works	Section A - (1.1 - 1.26.1)	I confirm ☒
Task 2	Franka stone and hollow concrete blocks masonry works	Section B - (2.1 - 2.12.3)	I confirm ☒
Task 3	Concrete works	Section C - (3.1 - 3.60.3)	I confirm ☒
Task 4	Formwork for Concrete works	Section D - (4.1 - 4.15.3)	I confirm ☒
Task 5	Reinforcement for Concrete works	Section E (5.1 - 5.11.4)	I confirm ☒
Task 6	Structural Steelworks	Section F (6.1 - 6.54.1)	I confirm ☒
Task 7	Mechanical works	Section G (7.1 - 7.14.1)	I confirm ☒
Task 8	Plumbing Works	Section H (8.1 - 8.10.2)	I confirm ☒
Task 9	Installation of pond liner underlay works	Section I (9.1 - 9.5.3)	I confirm ☒
Task 10	Installation of reinforced polyethylene works	Section J (10.1 - 10.4.2)	I confirm ☒

LBA Limited
66 Triq L-Arzna
SAN GWANN SGN1730 - MALTA
VAT N° 25771106

MACCAFERRI

TECHNICAL DATA SHEET
Rev. 17, Date 04/06/2024

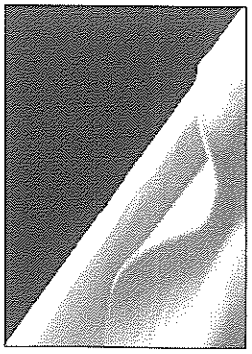
MACTEX® N 50.1
NEEDLEPUNCHED NONWOVEN GEOTEXTILES

MACTEX® N are nonwoven geotextiles manufactured with virgin high tenacity polypropylene fibres assembled by a needlepunched treatment only. The fabrics are CE marked according to EN 13249, 13250, 13251, 13252, 13253, 13254, 13255, 13256, 13257, 13265 for the following intended uses: F, D, R, F+D, F+S+D, F+R+S, F+S, R+S, F+R.

MACTEX® N			50.1	Notes
Mechanical and Hydraulic properties				
Tensile Strength - CMD	EN ISO 10319	kN/m	20.5	1, 2
Tolerance			-2.8	
Strain - CMD	EN ISO 10319	%	80	1
Tolerance			±20	
Tensile Strength - MD	EN ISO 10319	kN/m	17.0	1, 2
Tolerance			-2.0	
Strain - MD	EN ISO 10319	%	70	1
Tolerance			±20	
Static Puncture Resistance - CBR	EN ISO 12236	N	2750	1
Tolerance			-300	
Dynamic Puncture Resistance - Cone Drop	EN ISO 13433	mm	15	1
Tolerance			+5	
Permeability (normal to the plane)	EN ISO 11058	l/m²s	60	1, 3
Tolerance			±30	
Opening Pore Size O_{95}	EN ISO 12956	µm	85	1
Tolerance			±30	
Transmissivity at 20 kPa, i=1	EN ISO 12958	$1x10^{-6}$ m²/s	5.8	1
Tolerance			-2.3	
Physical properties				
Polymer raw material	high tenacity polypropylene fibres			
Mass per unit area	EN ISO 9864	g/m²	250	1
Thickness	EN ISO 9863-1	mm	2.5	4
Durability	Material to be covered within one month after installation. Predicted to be durable for 100 years service in natural soils with 4≤ph≤9 and soil temperature ≤25 °C			

NOTES:
1) Mean value; if not differently indicated a standard 10% tolerance value is admitted;
2) T_{ch} corresponds to the mean value deducted the tolerance and corresponds to the MARV at 95% of confidence limit;
3) Constant Head Permittivity Test performed at ΔH = 50mm;
   Intermediate geotextile grades are available on request.
   Loading plan by truck and container are available on request.
   These data are statistic figures according to Harmonized European Standards.
4) Nominal Informative value; such value is not representative of any technical performances so it's provided as informative note but it can change substantially for any production lot and 30% variation on the nominal value declared are possible

MD : longitudinal direction
CMD : transversal direction



For the optimisation and improvement process of the technical characteristics of the products, the producer reserves the right to modify standard and characteristics at the product without any warning. The information contained herein is to the best of our knowledge accurate, but since the circumstances and conditions in which it may be used are beyond our control, we do not accept any liability for any loss or damage, however arising, which results directly or indirectly from the use of such information nor do we offer any warranty or immunity against patent infringement.

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MACCAFERRI

TECHNICAL DATA SHEET

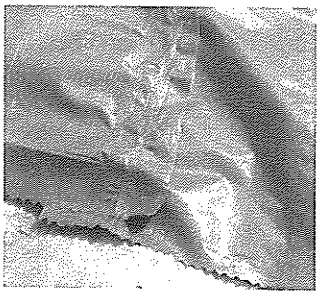
Rev. 07, Date 16.06.2026

MACLINE® W3.400

GEOMEMBRANE WITH WOVEN REINFORCEMENT

The geomembranes MACLINE® W3.400 consist of a woven geotextile reinforcement of high density polyethylene filaments laminated on both surfaces with a thick low density polyethylene film coating. The resulting material is very light but extremely mechanically resistant. Supplied in rolls of small width, it is usually assembled to form big sized sheets (with surface up to 2000-7200 m^2) with buttonholed borders (optional). MACLINE® W3.400 is the ideal solution for the temporary covering of soil banks, controlled landfills and small waterproofing applications.

MACLINE®			W3.400	
Mechanical characteristics				
Longitudinal tensile strength	EN ISO 527-4	kN/m	27.0 (-2.8)	1
Longitudinal elongation at max. load		%	30 (±3.0)	2, 3
Transversal tensile strength		kN/m	26.0 (-2.6)	1
Transversal elongation at max. load		%	24 (±2.4)	2, 3
Static puncture resistance CBR	EN ISO 12236	N	4300 (-430)	1
Joints shear strength	EN ISO 12317-2	N/50mm	964 (±100)	2, 3
Hydraulic characteristics				
Liquid permeability	EN 14150	$m^3/(m^2\,day)$	$< 1 \times 10^{-6}$	2, 3
Gas permeability	ASTM D 1434	$mol/(m^2\,s)$	146×10^{-9}	2, 3
Physical characteristics				
Mass per unit	EN 1849-2	g/m^2	380 (±10%)	2, 3
Nominal thickness	EN 1849-2	micron	600 (±10%)	2, 3
Standard colour			Green	
Roll length		m	100	4, 3
Roll width		m	2.05	5, 3
Roll surface		m^2	205	
Maximum size of preassembled sheet		m^2	7200	
Durability characteristics				
Temperature resistance	-	°C	$-30 \le T \le +70$	2, 3
UV resistance	-	kLy	500	2, 3
Weather resistance	EN 12224	Under UV doses of 350 MJ/m^2: residual tensile properties of ≥ 90%		
Oxidation resistance	EN 14575	Durable in natural soil with 4<pH<9 and temperature <25°C for a minimum of 25 years service life		



1) Characteristic value at 95% confidence limit corresponds to average minus the tolerance;
2) Typical value;
3) Informative value
4) Nominal value. A standard 1% tolerance is admitted;
5) Nominal value. A standard 3% tolerance is admitted.

For the optimisation and improvement process of the technical characteristics of the products, the producer reserves the factibility to modify standard and characteristics at the product without any warning. The information contained herein is to the best of our knowledge accurate, but since the circumstances and conditions in which it may be used are beyond our control, we do not accept any liability for any loss or damage, however arising, which results directly or indirectly from the use of such information nor do we offer any warranty or immunity against patent infringement.

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CT3029/2026 - INDICATIVE WORK PLAN / PROGRAMME OF WORKS (45 WEEKS)

Project Proposed Construction of a Bird Observatory including the Formation of 3 No. Brackish Water Ponds for Wader Species at Ghadira s-Safra

Contract Reference CT3029/2026

Performance Period 45 weeks from Order to Start Works

Mobilisation / Procure

WBS	Activity	Start Wk	Finish Wk	Duration	W 1	W 2	W 3	W 4	W 5	W 6	W 7	W 8	W 9	W 10	W 11	W 12	W 13	W 14	W 15	W 16	W 17	W 18	W 19	W 20	W 21	W 22	W 23	W 24	W 25	W 26	W 27	W 28	W 29	W 30	W 31	W 32	W 33	W 34	W 35	W 36	W 37	W 38	W 39	W 40	W 41	W 42	W 43	W 44	W 45
1	Mobilisation, site establishment, surveys, environmental and quality controls, technical submittals and long-lead procurement	1	16	16																																														
2.1	Site clearance within approved work limits	3	5	3																																														
2.2	Strip and segregate topsoil; temporary stockpiles and protection	3	6	4																																														
2.3	Temporary drainage, dewatering and erosion/sediment controls	3	12	10																																														
3.1	Excavation and formation of the three brackish-water ponds	5	11	7																																														
3.2	Pond formation, geotextile and liner installation, edging, habitat finishes, filling and testing	9	38	30																																														
4.1	Bird observatory and reservoir excavation, blinding and foundation works	6	16	11																																														
4.2	Reservoir structural works, waterproofing and water-tightness testing	14	26	13																																														
4.3	Planted roof, external cladding, apertures and internal architectural finishes	23	33	11																																														
5	Retaining walls, drainage, footpaths, roadworks, barriers and access works	7	37	31																																														
6	Mechanical engineering installations, pipework, valves, pumps and controls	22	35	14																																														
7	Electrical, lighting, power, earthing and photovoltaic installations	25	37	13																																														
8.1	Landscaping, habitat reinstatement, final grading and erosion protection	30	39	10																																														
8.2	Mechanical and electrical testing, integrated commissioning, pond filling and acceptance testing	35	41	7																																														
9	Snagging, as-built documentation, O&M manuals, training, demobilisation, final inspection and handover	35	45	11																																														

LEGEND: Blue cells indicate the planned execution period for each consolidated activity.

This indicative programme covers the complete 45-week performance period, including mobilisation, construction, testing, commissioning and handover.

GENERAL ENVIRONMENTAL PLAN

Tender Reference: CT3029/2026

PROPOSED CONSTRUCTION OF A BIRD OBSERVATORY

INCLUDING THE FORMATION OF THREE BRACKISH-WATER PONDS

FOR WADER SPECIES AT GĦADIRA S-SAFRA

1. Purpose and environmental commitment

LBA Ltd will plan and execute the Works so that environmental impacts are prevented or reduced at source, the site and its surroundings are protected, and all applicable permit conditions, approved drawings, contractual requirements and instructions of the Supervisor are complied with.

This General Environmental Plan (GEP) responds to tender item (c) and is aligned with the relevant Special Conditions, in particular the obligations to avoid unnecessary degradation of the site and surroundings, to comply strictly with Planning Authority Permit PA/01446/21, and to dispose of demolished material in an environmentally responsible manner with supporting evidence where requested.

The following principles will apply throughout the 45-week execution period:

- prevention before remediation;
- strict containment of works within approved construction limits;
- protection of habitats, vegetation, soil and water;
- waste prevention, segregation, traceability and lawful disposal;
- prompt response to incidents, complaints and non-conformities;
- continuous improvement through inspection, records and corrective action.

2. Environmental management responsibilities

Role	Principal responsibility
Contract Director / Project Manager	Ultimate accountability for compliance, resources and liaison with the Contracting Authority.
Environmental Coordinator	Maintains the GEP, environmental risk register, inspections, records, training and incident follow-up; reports directly to the Project Manager.
Site Manager	Implements controls daily, verifies subcontractor compliance and stops or modifies work where an unacceptable environmental risk is identified.
Supervisors and Foremen	Brief work teams, check controls before each activity and immediately report defects, spills, dust, noise or unauthorised disturbance.
Employees and Subcontractors	Comply with induction, method statements, designated routes, waste arrangements and emergency procedures.

Stop-work authority: the Site Manager and Environmental Coordinator will have authority to suspend an activity where there is an imminent risk of pollution, unauthorised habitat disturbance or breach of a permit/contract condition. Work will resume only after suitable controls are reinstated and verified.

3. Pre-commencement arrangements

1. Review PA/01446/21, approved drawings, reports, Special Conditions and the Supervisor's instructions; translate relevant requirements into an environmental compliance register.
2. Complete a pre-start photographic condition survey of access routes, construction limits, vegetation, drainage paths and sensitive receptors.
3. Mark the approved work footprint and establish clearly signed no-go areas. Areas outside the designated construction limits will not be disturbed.
4. Agree the site layout with the Supervisor, including access routes, material storage, segregated waste area, fuel/chemical storage, plant parking, wheel-cleaning point and concrete washout location.
5. Prepare activity-specific method statements for excavation, dewatering, concrete works, pond liner installation, demolition, waste handling and reinstatement.
6. Confirm authorised waste carriers and receiving facilities and establish a filing system for transfer/consignment notes, receipts and photographic evidence.
7. Provide spill kits, drain covers, drip trays, covered skips, dust-suppression equipment and emergency contact information before high-risk activities begin.
8. Deliver environmental induction to all personnel and a project-specific briefing to subcontractors before they start work.

4. Environmental control plan

The controls below are minimum tender-stage commitments. They will be supplemented by the permit conditions, detailed method statements and any instruction issued by the Supervisor.

Aspect	Main risk	Controls / method	Monitoring and evidence
Site boundary and sensitive habitat	Unauthorised disturbance, vegetation damage, impact on bird habitat	Fence/mark approved limits and no-go zones; use defined routes and working areas; protect retained vegetation; prohibit storage or parking outside the work footprint; sequence intrusive works to minimise disturbance and comply with any ecological restrictions in the permit or Supervisor's instructions.	Daily boundary check; weekly photos; record any encroachment and corrective action.
Dust and air quality	Dust from excavation, stockpiles, cutting and vehicle movement	Dampen exposed surfaces and haul routes as needed; cover fine materials and loaded vehicles; use dust extraction or wet cutting; impose low site speeds; minimise drop heights; clean wheels and access roads; stop or modify dusty work during unsuitable wind conditions; no open burning.	Daily visual inspection and complaint log; increase controls immediately where visible dust leaves the site.
Noise and vibration	Disturbance to fauna, neighbours and site users	Use maintained, appropriately sized plant; fit effective silencers; avoid unnecessary idling; locate stationary equipment away from sensitive areas; schedule high-noise work in agreed hours; use temporary screening where practicable; notify the Supervisor before exceptional noisy activities.	Daily observation; equipment maintenance records; investigate complaints and undertake measurements if instructed.
Topsoil, excavation and stockpiles	Loss of reusable soil, erosion, sediment mobilisation and excessive land take	Strip and stockpile organic topsoil separately; do not use topsoil as fill; keep stockpiles stable, covered or dampened as appropriate and away from drainage paths/excavation edges; minimise open excavation and over-excavation; reuse suitable excavated material only where approved.	Stockpile register and weekly inspection, especially before/after rain.
Water, dewatering and runoff	Silted or contaminated discharge; flooding; impact on soil or ponds	Keep excavations generally dry using approved temporary water-control measures; do not discharge silty or contaminated water uncontrolled; use settlement/filtration or licensed removal as appropriate; protect drainage paths; inspect weather forecasts and secure materials before rainfall; obtain Supervisor approval for temporary runoff arrangements.	Daily check of excavations and discharge points; record dewatering method, destination and approvals.
Fuel, oils and chemicals	Soil or water contamination from leaks and spills	Store in labelled, closed containers within secure secondary containment on an impermeable surface; keep Safety Data Sheets available; refuel in a designated controlled area using drip trays; inspect plant for leaks; prohibit unattended dispensing; keep spill kits at storage and refuelling points.	Daily visual check; weekly storage inspection; plant defect and spill records.
Concrete, mortar and wash water	Alkaline contamination of ground or water	Use a designated lined/contained washout area; prevent concrete, grout, cement dust and wash water from entering soil, drains or ponds; protect pours from rainfall; remove hardened residues as controlled construction waste.	Inspect during each pour and at close of shift; maintain washout-cleaning records.
Waste and demolished materials	Litter, illegal disposal, mixing of waste streams and loss of traceability	Apply the waste hierarchy; segregate inert, metal, timber, packaging, hazardous and general waste; use covered labelled containers; no burying or burning; remove waste through authorised carriers to authorised facilities; retain all receipts and transfer/consignment documentation; dispose of demolished material at the Contractor's expense in an environmentally responsible manner.	Weekly waste-area inspection; waste register showing type, quantity, carrier, destination and document reference.
Materials and pond components	Damage or contamination of geotextile, liner, pipes and imported materials	Store materials off the ground, protected from contamination, weather and vehicle damage; inspect geotextile/liner before installation; collect offcuts and packaging promptly; prevent oils, sharp objects or debris from damaging pond layers; use compliant products and retain certificates.	Delivery inspection, product certificates, installation checklists and defect close-out.
Traffic, access and mud	Track-out, dust, unsafe deliveries and off-site nuisance	Use agreed routes and delivery times; brief drivers; maintain low speeds; prevent overloading; cover loads; provide wheel/tyre cleaning where needed; promptly remove mud or debris from public roads; coordinate traffic arrangements with relevant stakeholders where required.	Daily access-road inspection and delivery log.
Housekeeping and resource use	Litter, unnecessary water/energy use and fire risk	Maintain tidy work areas; secure lightweight materials; provide bins and sanitary facilities; shut down idle equipment; repair leaking hoses; use water efficiently; store combustible material safely and remove waste regularly.	End-of-shift housekeeping check and weekly inspection.
Unexpected discovery / environmental incident	Pollution, protected feature disturbance, unknown contamination or ecological discovery	Stop work, isolate the area, prevent escalation and notify the Site Manager and Supervisor immediately; do not remove or disturb the item/area until instructions are received; implement the emergency response procedure and notify authorities where legally required.	Incident report, photographs, notifications, root-cause review and corrective-action closure.

5. Inspection, monitoring and records

Daily checks: The Site Manager/foreman will verify boundary controls, dust, housekeeping, waste containment, leaks, runoff and road cleanliness before and during work.

Weekly environmental inspection: The Environmental Coordinator will complete a formal checklist with photographs, responsible persons and target dates for corrective actions.

Activity hold points: Environmental controls will be checked before excavation/dewatering, concrete pours, refuelling arrangements, waste removal, liner installation and reinstatement.

Reporting: A concise environmental summary will be submitted to the Supervisor at the frequency agreed, covering inspections, waste movements, incidents, complaints, corrective actions and upcoming high-risk works.

Document retention: Records will include inductions, toolbox talks, permits/approvals, inspections, waste documents, maintenance checks, incident reports, complaints, photographs, product certificates and close-out evidence.

Tender-stage performance targets

Indicator	Target
Unauthorised discharges to soil, drainage or ponds	Zero
Open burning or burial of waste	Zero
Waste removals supported by traceability documents	100%
Personnel environmentally inducted before starting work	100%
Corrective actions closed by agreed deadline	100%
Environmental complaints acknowledged and investigated	100%

6. Incident and emergency response

1. Stop the activity and raise the alarm.
2. Protect people first, then stop the source where safe to do so.
3. Contain the spill, sediment or debris using spill kits, booms, drain covers, sand or other suitable materials.
4. Prevent entry to soil, drainage routes, excavations and pond areas.
5. Notify the Site Manager, Environmental Coordinator and Supervisor without delay; notify the relevant authority where required by law or permit.
6. Recover contaminated material and dispose of it through an authorised route.
7. Record the incident, investigate root cause, implement corrective action and restock emergency equipment before work resumes.

7. Training, communication and subcontractor control

- All workers will receive an environmental induction covering site limits, sensitive areas, waste segregation, spill response, dust/noise controls and incident reporting.
- Toolbox talks will be delivered before environmentally significant activities and repeated following an incident, complaint or change in method.
- Subcontracts and purchase orders will include the applicable environmental requirements. Subcontractors remain subject to the same inspections and corrective-action process as the contractor's direct workforce.
- Environmental signs and emergency contacts will be displayed at the site office, storage areas, waste area and refuelling point.
- LBA ltd will cooperate with the Supervisor and other stakeholders, provide requested evidence and promptly implement instructions.

8. Completion and environmental close-out

- Remove all temporary facilities, waste, surplus materials, spills and contamination.
- Reinstate temporary work areas and access points in accordance with the approved drawings, permit conditions and Supervisor's instructions.
- Confirm that no waste, plant, fuel, chemical container or temporary control remains on site.
- Submit the final waste register and disposal evidence, outstanding incident/corrective-action close-outs, product/environmental certificates and photographic completion record.
- Support final inspection and rectify any environmental defect identified before acceptance.

9. Contractor's declaration

LBA Ltd confirms that the resources, supervision, equipment and procedures described in this General Environmental Plan will be provided as part of the tendered Works and at no additional cost to the Contracting Authority. The Plan will be reviewed whenever the programme, method, permit requirements or site conditions change, and will be updated subject to the Supervisor's approval.

DESCRIPTION OF QUALITY ASSURANCE SYSTEMS

Tender Reference: CT3029/2026

PROPOSED CONSTRUCTION OF A BIRD OBSERVATORY

INCLUDING THE FORMATION OF THREE BRACKISH-WATER PONDS

FOR WADER SPECIES AT GĦADIRA S-SAFRA

1. Purpose and status of this submission

LBA ltd proposes a practical quality assurance and quality control system to support the successful completion of the Works. The system will provide planned review, approval, inspection, testing, traceability and corrective-action controls without creating unnecessary administrative complexity.

This document responds to tender item (d). It is an outline tender commitment rather than a final Project Quality Plan. During mobilisation, it will be developed to reflect the final programme, approved construction methods, subcontractors, suppliers and instructions of the Contracting Authority's Supervisor/Project Manager.

The system will be aligned with the contract documents and their order of precedence, the Technical Specifications and drawings, the approved Planning Authority permit PA/01446/21, applicable Maltese and European requirements, and the instructions of the Supervisor. Particular attention will be given to good workmanship, controlled progress, product compliance, inspection and testing, and complete handover documentation throughout the 45-week execution period.

2. Quality objectives

- Execute the Works in accordance with the approved drawings, specifications, permit conditions and authorised instructions.
- Use competent personnel, approved materials and suitable plant, equipment and measuring devices.
- Inspect and test work at planned stages before it is covered up or allowed to proceed.
- Identify deviations early, prevent recurrence and verify that corrective action is effective.
- Maintain concise and traceable records sufficient to demonstrate compliance and support final acceptance.

3. Proposed responsibilities

Role	Main quality responsibility
Contractor's Project Manager / Perit	Overall accountability for contract compliance, technical coordination, approvals, resources and implementation of corrective action.
Site Technical Officer / Site Manager	Day-to-day control of workmanship, coordination of inspections, use of current drawings and prevention of unauthorised continuation of non-conforming work.
Quality Coordinator	Maintains the quality plan and registers; coordinates submittals, inspections, tests, non-conformance reports, reporting and the final quality dossier.
Foremen, subcontractors and suppliers	Execute approved methods, provide required certificates and records, cooperate with inspections and rectify identified defects.

The same quality requirements will apply to subcontractors and suppliers. Responsibility for the conformity of the Works will remain with the Contractor.

4. Quality assurance and control system available

Control	Proposed application	Typical evidence
Contract review and document control	Review contract requirements before starting each work package. Maintain controlled registers so that site personnel use current drawings, specifications and instructions only.	Document register, drawing revision list, RFI and instruction logs.
Method statements and planning	Prepare proportionate method statements, checklists and Inspection and Test Plans (ITPs) for significant activities. Agree witness and hold points with the Supervisor.	Approved method statements, ITPs, briefings and inspection notifications.
Materials and suppliers	Submit technical data, samples, certificates, declarations and warranties for approval before incorporation. Check deliveries against approved submittals and protect materials during storage.	Material submittal register, delivery records, CE/DoP or equivalent evidence, certificates and warranties.
Inspection and hold points	Undertake routine site checks and formal inspections before concrete pours, covering-up, liner acceptance, testing and other critical stages. Work will not pass an agreed hold point until released.	Inspection requests, signed checklists, photographs, survey records and approvals.
Testing and measuring equipment	Arrange sampling and testing required by the specifications through competent laboratories, accredited where required. Use suitable and calibrated measuring equipment.	Test reports, sample records and calibration certificates.
Non-conformance and corrective action	Identify and segregate non-conforming work or material, record the issue, determine the cause, implement approved rectification and complete re-inspection before close-out.	NCR/corrective-action register, repair proposals, re-inspection and closure evidence.

Control	Proposed application	Typical evidence
Review and reporting	Review quality status with the site team at regular intervals and provide concise reports to the Supervisor at the agreed frequency.	Quality summaries, meeting records, open-item tracker and close-out status.

5. Preliminary project-specific control points

The final ITPs will be activity-specific. At tender stage, the following principal controls are anticipated:

Work stage	Outline checks
Setting-out, services and earthworks	Verification of existing services, survey control, excavation lines and levels, pond geometry, formation condition, fill suitability and compaction before subsequent layers.
Structural and building works	Approval and inspection of reinforcement, formwork, concrete, masonry, structural steel, waterproofing and finishes against drawings, specifications and approved materials.
Pond lining system	Approval and traceability of geotextile and liner materials; substrate inspection; verification of installation equipment and workmanship; visual, non-destructive and required destructive seam testing; final water-retention/leak checks before acceptance.
Drainage, electrical and other installations	Inspection of routes, levels, supports, connections and concealed work before closure, followed by functional testing and certification where applicable.
Completion and handover	Final inspections, defects close-out, as-built information, material certificates, test reports, manuals, warranties and other records required for acceptance.

6. Records, completion and improvement

Quality records will be maintained in an organised electronic and/or hard-copy filing system, with access provided to the Supervisor when requested. The minimum record set will include:

- controlled drawings, specifications, RFIs and instructions;
- approved material submittals, samples, certificates and delivery checks;
- method statements, ITPs, inspection requests, checklists and photographic records;
- survey information, test reports and equipment calibration evidence;
- non-conformance, corrective-action and defects registers; and
- as-built drawings, manuals, certifications, warranties and the final quality handover dossier.

The quality system will be reviewed during the Works and adjusted where inspections, tests, complaints, changes or recurring defects show that additional controls are necessary. Lessons identified will be communicated through site briefings and revised procedures.

7. Bidder's commitment

LBA Ltd confirms that competent supervision, inspection, testing and document-control resources will be provided. A concise project-specific Quality Plan, with the initial method statements and ITPs, will be prepared during mobilisation before the relevant works commence.

PROPOSED ACCOMMODATION AND FACILITIES FOR THE SUPERVISOR

Tender Reference: CT3029/2026

PROPOSED CONSTRUCTION OF A BIRD OBSERVATORY INCLUDING THE FORMATION OF THREE BRACKISH-WATER PONDS FOR WADER SPECIES AT GHADIRA S-SAFRA

Tender-stage statement The arrangements described below are preliminary and will be finalised after award, taking account of the approved site set-up, the available working area, health and safety requirements and the reasonable instructions of the Supervisor.

1. Purpose and commitment

The Bidder will provide and maintain suitable facilities to enable the Contracting Authority's Supervisor and authorised representatives to monitor the Works efficiently throughout the 45-week execution period. The arrangements will support inspections, meetings, review of records, communication and safe access without relieving the Contractor of any contractual responsibility.

2. Proposed accommodation

Subject to the approved site logistics plan and the Supervisor's requirements, a clean and secure working space will be made available within, or immediately adjoining, the Contractor's site office. Where the site configuration does not permit a separate dedicated unit, an appropriately reserved workstation and meeting area of equivalent function will be provided.

- A desk or workstation, suitable chair and access to a meeting table for drawings, records and coordination meetings.
- Adequate lighting, ventilation and weather protection, together with a reliable electricity supply.
- Reasonable access to internet and telephone communication, printing/scanning and document review facilities.
- Lockable storage for current drawings, instructions, reports and other project records made available for review.
- Access to suitable sanitary and welfare facilities maintained in a hygienic condition.

3. Access, safety and site support

The Supervisor and authorised representatives will be afforded safe and timely access to the Works, including areas under inspection, subject to the site safety rules applicable to all visitors and personnel.

- A safe approach to the office and active work areas, with appropriate signage, housekeeping and temporary access arrangements.
- Site induction and relevant updates on current hazards, restricted areas and emergency arrangements.
- Visitor personal protective equipment, where required for occasional authorised visits.
- Reasonable assistance for inspection, measurement and testing, including access to current drawings and competent site personnel.

4. Communication and document availability

The Site Manager will act as the principal day-to-day contact. Current controlled information will be kept readily available for review, including the approved programme, drawings, method statements, inspection and test records, material submissions, instructions, progress records and health, safety and environmental documentation relevant to the Works.

Meetings may be held in the site office or another suitable agreed location. Verbal instructions will be recorded and confirmed in writing in accordance with the Contract, including the five-working-day period stated in Special Condition 5.13.

5. Maintenance of the facilities

The Contractor will keep the accommodation and associated facilities serviceable, orderly and secure for the period during which they are required. Consumables, cleaning, routine maintenance and replacement of defective basic equipment will be managed by the Contractor. The arrangement will be reviewed during mobilisation and adjusted where reasonably required by the Supervisor or by changing site conditions.

6. Contractual alignment

This proposal supports the Supervisor's functions under Special Condition Article 5, including oversight of progress, compliance with the Specifications and Drawings, and workmanship. It also supports the Supervisor's inspection and testing rights under Article 40, the programme coordination required by Article 15, and safe access arrangements under Article 20. The final arrangement will remain subject to the Contract, the approved site establishment and all applicable statutory requirements.

7. Bidder's declaration

The Bidder confirms that the above accommodation, access and support facilities will be allowed for within its tender and made available, maintained and adapted as reasonably necessary for the successful supervision of the Works, without additional charge to the Contracting Authority unless a material change is instructed outside the Contract requirements.