

**DIO BELIZE**

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| **BOOKLET 3**  **CONDITIONS OF CONTRACT**  **LUMP SUM FIRM PRICE CONTRACT FOR THE**  **RAW WATER STORAGE TANK.**  **AT**  **PRICE BARRACKS, DIO BELIZE** |

**References**

1. The Health & Safety at Work Act 1974 (HASWA).
2. Construction (Design & Management) Regulations 2015 (CDM 2015).
3. The Latest Edition of the UK Building Regulations.
4. JSP 375 manual of health and safety
5. Electricity at Works Regulations 1989.
6. The Electricity Safety, Quality and Continuity Regulations 2002.
7. 18th Edition BS 7671: 2018+A2:2022 Requirements for Electrical Installations.
8. BS 5228-1:2009 Code of practice for noise
9. BS 5228-2:2009 Code of practice for vibration.
10. BS EN 13280 for glass reinforced plastic sectional tanks
11. BS 1710 - Specification for identification of pipelines and services

# The drawings attached to this document, are to be read in conjunction with this Performance Specification (PS) for the Raw water storage tank. It should be noted that these drawings are **‘Concept Only’** and the contractor is to produce a full set of design drawings with accompanying design calculations for this project. All design drawings will require Authority acceptance and approval before works commences on site.

Contractors Design

# The Contractor is to advise the PM DIO Belize of all design consultants/sub-contractors who will be employed on this project and the areas of their design responsibility. Any works undertaken without prior issue of full information for the necessary approvals will be entirely at the Contractor’s own risk.

# The Contractor shall not commence any work in accordance with any Design Document until the PM has agreed the relevant Design Document. The Contractor shall keep one copy of each Design Document on the Site, to which the PM or his representatives may have access at all reasonable times.

Design Responsibilities

# **Contractor’s Design Responsibilities.** The raw water storage tanks do not need designing due to being repaired / replaced on a like for like basis~~.~~ The Authority’s conceptual drawings submitted in the ITT documentation are to be used as a **reference guide only**.

# **NOT USED**

# **UK Building Regulations.** All works shall comply with the latest UK Building Regulations where possible. Should any variation be required, approval from the Authority shall be obtained in writing prior to the commencement of any works.

# **Health and Safety.** All works shall be carried out in accordance with the Health & Safety at Work Act 1974 (HASWA). The Contractor shall submit a pre-construction H&S file to the Authority for approval, including all risk assessments, method statements, hazardous material procedures, etc. to comply fully with Construction (Design & Management) Regulations 2015 (CDM 2015).

# Upon project completion the H&S file shall be presented to the Authority 10 days before the Board of Officers is convened and in compliance withCDM 2015.

# **Construction Drawings.** **Not used**

# **Design Life.** The design life of all new structural components and assemblies to first major overhaul, repair or replacement shall be a minimum of 10 years. The Contractor shall supply and install all components, elements and systems/structures to satisfy this requirement, and provide documentary evidence as per CDM 2015 and any additional contractual requirements that may apply.

# **Existing Services.** The Contractor is responsible for ensuring all services on or adjacent to the site that will be affected by the works are identified, located and appropriate action taken to prevent damage before work commences. The Contractor shall ensure that any existing services and concrete slabs are reinstated to a condition at least similar to existing, with the minimum of disruption to existing facilities and services during construction. All works that could possibly influence existing services may only commence with written approval – this includes but is not limited to a Permit to Dig. The Authority must be informed immediately if any unknown services are discovered that will have an impact on the works.

# The Contractor shall ensure that any existing services and affecting works – including all connections and services tied into – are of an acceptable standard to ensure the required performance over the life of the facility. Should it be found that one or more of the services (including but not limited to existing water, sewerage, drainage and electrical reticulation) is not considered acceptable to the project requirements, the Contractor shall inform the Authority and obtain written approval/instruction prior to taking any actions to rectify or make good the pertinent unacceptable situation.

Scope of the Overall Project

# **General.** This Performance Specification (PS) outlines the requirements for the repair of the Raw water storage tank.

# **The Authority.** DIO Belize is the Authority for the project. For the purpose of this Performance Specification, the PM is any person from within the Authority acting on behalf of the PM, the Superintending Officer (SO) in most cases.

# **Site location.** The site is situated on the centre of the western boundary within Price Barracks. Price Barracks (PB) is located 15 km Northwest of Belize City. The nearest town is Ladyville located 2 km to the North. The site consists of a small road / track and several small buildings containing borehole pumps. the foundations of the previous raw water storage tanks are also present. The site is surrounded by a perimeter fence with gated access. The site-specific demarcation can be seen at Dwg No **DIO/BATSUB/BEL\_GE/G/016 and DIO/BATSUB/BEL\_GE/G/001**. The Authority is to be approached for confirmation on when the site will be clear of obstructions.

# **Use of the Site.** The site is already fenced off. The Site shall not be used for any purpose other than undertaking the specified works. The Contractor shall use the raw water storage area for no longer than is required to complete the Works. No storage of materials, parking of vehicles, temporary accommodation, or any other use of areas beyond the boundaries of the raw water storage area shall be permitted. Under no circumstances shall it be permissible for the Contractor to cause an obstruction to normal pedestrian or vehicular movements within the vicinity of the site.

# **Restrictions to the Works.** The works are to be undertaken without interfering with every day running of the Authority’s operations within the area. The demarcation of the site boundary is to be obvious and clearly marked to restrict access to the site whilst the works are being undertaken.

Proposed Works

# The proposed works for the task are; the repair of the 480m3 raw water storage tank with internal partition at the location of the previously damaged tank. See Dwg No **DIO/BATSUB/BEL\_GE/G/016**.

# **Use of Design Codes and Specification**

# **NOT USED**

# **NOT USED**

Management of the Works

# **NOT USED**

# **Management of the works**

# **Personnel.** The Contractor is fully responsible for ensuring all personnel within the workforce are authorised to gain access to, and work within, Price Barracks. The Contractor is solely responsible for the submission and approval of passes and the Authority will not grant extensions to performance periods based on delays obtaining passes for access to the Base. The Contractor shall be responsible for the transportation of contractor personnel both to and from the site.

# **Liaison with the Authority.** The Contractor shall designate a Liaison Officer from their organisation who will be responsible for liaising with the PM or their representative (SO) on a day-to-day basis and as the need arises. The person so designated shall be responsible for communicating with the Authority regarding notification of intended work and explaining the effect that the works will or may have on the operation or systems within the water supply provided to Price barracks. Additionally, the Liaison Officer will be responsible for responding to the Authority’s enquiries and dealing with any issues or complaints. It is a requirement that the Contractor’s Liaison Officer makes daily contact with the Authority such that an active rather than a responsive attitude to liaison is maintained. The Contractor’s Liaison Officer is a key person in achieving the successful execution of this Contract.

# **Supervision.** The Contractor shall accept responsibility for design, co-ordination, supervision and administration of the Works, including all subcontracts. They shall arrange and monitor a programme with each subcontractor, supplier, local Employer and any statutory undertaker, and obtain and supply information as necessary for co-ordination of the work. In addition to constant management and supervision of the Works provided by the Liaison Officer, all significant types of work must be under the close control of competent trade supervisors to ensure maintenance of satisfactory progress and quality.

# **Co-ordination of Engineering Services.** The site organisation staff must include one or more persons with appropriate knowledge and experience of mechanical and electrical engineering services to ensure compatibility between engineering services, one with another and each in relation to the Works generally.

# **Approvals.** Where products or work are specified to be approved or the PM instructs or requires that they are to be approved, the same must be supplied and executed to comply with all requirements.

# **Photographs.** Only photographs within the confines of the raw water storage tank area shall be taken for the purpose of daily / weekly updates. No other Photographs of the site or the remainder of the Barracks maybe taken without the express Authority of the PM.

# **Programme of Works.** Prior to the commencement of the works, the Contractor shall liaise with the Authority, in order to produce a detailed programme of works. This programme shall be agreed and approved and shall form the baseline programme for the project. Any deviations from the agreed programme shall be communicated to the Authority, with programme updates being produced if required and approved by the Superintending Officer. The programme must be daily resolution and show when stores equipment and plant deliveries will occur.

# **Programme Status.** The Contractor shall also show on this programme each state of both design and construction of the various elements of the works so as to illustrate the latest dates by which instructions requiring changes can be accommodated in each part of the Works without effecting the completion thereof. Thereafter, the Contractor shall amend and revise the programme as required by the Conditions of Contract and as required by the PM. The submission of a programme will not relieve the Contractor of his responsibility to apply in writing for instructions, drawings etc. in accordance with the Conditions of Contract.

# **Commissioning Period.** One month before the start of any commissioning period the Contractor shall submit a Works Commissioning Plan, setting out his commissioning proposals including the preparation of handover documentation.

# **Commencement of Work.** Inform the PM at least five days before the proposed date for commencement of work on site.

# **Monitoring.** The contractor is to record progress on a copy of the programme kept on site. If any circumstances arise, that may affect the progress of the works, put forward proposals or take other action as appropriate to minimise any delay and to recover any lost time. A daily site diary in an appropriate format is to be kept by the contractor. The site diary is to include details of personnel and plant/equipment on site and is also to include delays and their reasons, visitors to site and works progress. Variation orders and both written and verbal site instructions are also to be included. This is to form the basis of the Weekly Progress Report that is to be submitted to the Authority weekly. A proposed format for the Weekly Progress Report can be obtained from the Authority.

# **Site Meetings.** The PM, or his representative, will hold regular site meetings to review progress and other matters arising from the administration of the Contract. It will be the Contractors responsibility to ensure the availability of accommodation and attend all such meetings.

# **Contractors Site Meetings.** The Contractor is to hold meetings with appropriate subcontractors and suppliers shortly before site meetings with the Authority to facilitate accurate reporting of progress.

# **Notice of Completion.** The Contractor is to provide the PM at least seven days notice of the anticipated dates of Practical Completion of the whole or parts of the Works.

# **Extension of Time.** When it is necessary to report a cause of a delay or likely delay in the progress of the Works this shall be given in the form of a written notice that must also be given of all other causes, which apply concurrently. The notice shall state the following details.

## The cause of delay or likely delay.

## Relevant particulars of the expected effects if appropriate related to the concurrent causes.

## An estimate of the extent, if any, of the expected delay in the completion of the Works beyond the Date of Completion.

## Any other relevant information required by the PM.

# **Quality Standards/Control.** The contractor will provide evidence to the PM of his quality standards and controls, and will produce a plan detailing QC activities in order for the PM to plan for witnessing of critical activities.

## General Quality of Products. All products shall conform to the following subparagraphs:

### Products to be new unless otherwise specified by the Authority.

### For products specified to a BS or EN obtain certificates of compliance from manufacturers when requested. In cases where locally procured materials do not have such certificates, the contractor must provide evidence demonstrating that these products will exhibit equivalent performance in terms of safety, serviceability, robustness and durability as specified in the relevant BS or EN standards.

### Where a choice of manufacturer or source is allowed for any particular product, the whole quantity required must be of the same type, manufacture and/or source unless otherwise approved. Produce written evidence of sources of supply when requested by PM.

### Ensure that the whole quantity of each product required to complete the work is of consistent kind, size, quality and overall appearance.

### Where consistency of appearance is desirable ensure consistency of supply from the same source. Do not use different colour batches where they can be seen together.

### If products are prone to deterioration or have a limited shelf life, order in suitable quantities to a programme and use in appropriate sequence. Do not use if there are any signs of deterioration, setting or other unsatisfactory condition.

## Proprietary Products. All products shall conform to the following subparagraphs.

### Handle, store, prepare and use or fix each product in accordance with its manufacturer's current printed or written recommendations/instructions. Inform PM if these recommendations/instructions conflict with any other specified requirement. Submit copies to PM when requested.

### The tender will be deemed to be based on the products specified and recommendations on their use given in the manufacturer’s literature current at the date of tender.

### Obtain confirmation from manufacturers that the products specified and recommendations on their use have not been changed since that time. Where such change has occurred inform PM and do not place orders for or use the affected products without further instructions.

## **Checking Compliance of Products.** The Contractor shall check all delivery tickets, labels, identification marks and where appropriate the products themselves to ensure that all products comply with the project documents. In particular, check that the products comply with the following sub-paragraphs.

### The sources, types, qualities, finishes and colours are correct, and match any approved samples.

### All accessories and fixings that should be supplied with the products have been supplied.

### Sizes are correct. Where tolerances are critical, measure a sufficient quantity to ensure compliance.

### The delivered quantities are correct, to ensure that shortages do not cause delays in the work.

### The products are clean, undamaged and otherwise in good condition.

### Any products with a limited shelf life are not out of date.

## **Protection of Products.** All products shall be protected to ensure that they remain in the condition they are required to be in. In particular the contractor is to ensure that products are to be prevented from overstressing, kept clean, protected from the elements and kept in original wrappings until required for the project.

# **Prohibited Products.** The Contractor shall not employ on or incorporate in the Works any of the following products and shall impose a like obligation upon all Sub-Contractors.

## Asbestos materials as described in the Asbestos Prohibitions Regulations 1985 and the Asbestos Products (Safety) Regulations 1985.

## Lead or any products containing lead for use in connection with drinking water.

## Materials that are generally composed of mineral fibres either manmade or naturally occurring which have a diameter of 3 microns or less and a length of 200 microns or less or which contain any fibres not scaled or otherwise stabilised to ensure that fibre migration is prevented.

## Other products or substances generally known to be deleterious to health and safety at the time of use or to the durability of the property in the particular circumstances in which they are being used.

# **Setting Out.** **NOT USED**

# **Record Drawings.** **NOT USED**.

# **Service Runs.** The Contractor shall make adequate provision for services, including unobstructed routes and fixings. Wherever possible ducts, chases and holes are to be formed during construction rather than cut.

# **Mechanical and Electrical Services.** Mechanical and Electrical Services must have final tests and commissioning carried out by the Contractor so that they are in full working order at Practical Completion. All inspection and testing certificates to be presented to the PM on completion of the works.

# **Access.** The Contractor shall provide at all reasonable times, access to the Works. The Contractor shall supply the PM or his representative with copies of any documentation and drawings, which may reasonably be required for the purposes of monitoring the work performed under this or any sub-contract. The PM is to be provided with three copies of all construction drawings prior to the commencement of the works. These drawings are to be updated as necessary by the Contractor during the works.

# **Defects in Existing Construction/Services.** This shall be reported to the PM without delay. Obtain instructions before proceeding with work which may be covered up or otherwise hinder access to the defective construction, or be rendered abortive by the carrying out of remedial work. This is particularly relevant in relation to the expansion of the existing service runs.

# **Timing of Tests and Inspections.** The Contractor is to agree dates and times of tests and inspections with PM four days in advance, to enable the PM and other affected parties to be present. On the previous working day to each such test or inspection the Contractor is to confirm to the PM that the work or sample in question will be ready or, if not ready, agree a new date and time. Any electrical testing carried out on the control units should be carried out by a 2391 qualified person. The authority will assist in this matter.

# **Test Certificates.** The Contractor is to submit electronic and hard copies of each certificate to PM as soon as practicable and keep copies of all certificates on site. Copies should be included in the Health and Safety File on handover of the works.

# **Proposals for Rectification of Defective Work/Products.** As soon as possible after any part(s) of the work or any products are known to be not in accordance with the Contract, or appear that they may not be in accordance, the Contractor is to submit proposals to the PM for opening up, inspection, testing, making good, or removal and re-execution. Such proposals may be unacceptable to the PM and he may issue contrary instructions.

# **Quality Control.** The Contractor is to establish and maintain procedures to ensure that the works, including the work of all Subcontractors, comply with specified requirements. This is to include all testing of materials that are to be incorporated into the project (e.g. 316 stainless steel). The Contractor is to maintain full records, keep copies on site for inspection by the PM, and submit copies of particular parts of the records on request. The records must include the following:

## Identification of the element, item, batch or lot including location in the works.

## The nature and dates of inspections by the Contractor or PM, tests and approvals.

## The nature and extent of any non-conforming work found.

## Details of any corrective action.

# **Work at or after completion.** The Contractor is required to undertake the following works prior to handover.

## Make good all damage consequent upon the work.

## Remove all temporary markings, coverings and protective wrappings unless otherwise instructed.

## Clean the works thoroughly inside and out including all accessible ducts and voids; remove all splashes, deposits, efflorescence, rubbish and surplus materials consequent upon the execution of the work.

## Cleaning materials and methods to be as recommended by manufacturers of products being cleaned, and to be such that there is no damage or disfigurement to other materials.

## Obtain COSHH dated data sheets for all materials used for cleaning and ensure they are used only as recommended by their manufacturers.

# **Security at Completion.** The Contractor is to leave the Works secure with all accesses locked. Account for and adequately label all keys and hand over to PM with itemised schedule, retaining duplicate schedule signed by PM as a receipt.

# **Making Good Defects.** The Contractor is to make arrangements with the PM and give reasonable notice of the precise dates for access to the various parts of the Works for purposes of making good defects. The PM is to be informed by the Contractor when remedial works to the various parts of the Works are completed and ready for approval.

Documents to be Provided by Contractors

# **Design Information.** Particular reference is made to Clause 46 of the Conditions of Contract. The Contractor is to submit all design / specification information to the Authority prior to commencement of the construction phase. The PM will examine construction documentation and shall be entitled to reject a proposal as unsatisfactory where it is not in accordance with the specification, statutory regulations, or if it would be unfit for purpose. One copy of all construction drawings is to be provided by the Contractor to the PM prior to commencing Works. Amended or updated drawings are to be provided as necessary. The minimum design information to be provided by the Contractor shall include the following:

## **NOT USED**.

## **NOT USED**

## **NOT USED.**

## **NOT USED**.

## Services layouts.

## Detailed electrical, mechanical drawings and calculations.

## Manufacturer product details, including safety data sheets.

## Project Programme, to be regularly updated or upon request by the Authority and provided electronically on Microsoft Project 2003, or equivalent.

## Health and Safety File to include all calculations and ‘As Built Drawings’.

# All drawings shall be prepared to best practice and should include all relevant data required to construct the facilities in question. Design drawings shall be submitted for approval as a group, using consistent sheet sizes. All drawings within the submittal for approval shall have identical title blocks and shall include a consistent numbering schedule, indicating amendments where applicable.

# **The signed and approved drawings shall be used as the construction drawings on site for all work purposes and to satisfy the requirements as specified by CDM 2015**.

# **Construction and ‘As Built’ Drawings.** ‘As Built’ drawings shall be submitted 28 days after completion of the works as directed by the Authority.

# **Site Diary.** The Contractor shall keep an up to date, daily, site diary. This document is to be used to record all decisions made on the site both verbal and written. The document is also to be used to record visits to site and note anything, which has a direct effect on the project in terms of cost and extensions to time, or any other occurrence that affects the project programme. All changes must have been agreed and authorised by the Authority. The site diary shall list in writing all issued variation orders and site instructions, including amended drawings, and verbal decisions made on site. All verbal decisions must be recorded in writing no less than 24hrs after they have been made and entered in the site diary. The Contractor shall on request make the site diary available for the Authority to inspect. This document will be used as the audit trail in light of any disputes, concerning the project.

General Conditions

# **Preparatory Works.** All local services are to be identified and adequate precautions taken to protect such services from damage for the duration of the works, or alternatively to relocate or disconnect with alternate provision, as per design and site requirements. The Authority shall be informed immediately if any unknown services are discovered that will have an impact on the works. All existing buildings and other facilities if any shall be identified, and precautions taken to mitigate the effects of works ongoing operations and facilities. This includes but is not limited to dust, noise, security, H&S, maintaining unobstructed access, establishment of clearly demarcated works and storage areas.

# The Contractor shall verify with the Authority which site features are to be removed and protected during construction works. All setting out shall be completed by the Contractor, as well as any and all ongoing monitoring of works to ensure accuracy, plumb and level.

# **Signage.** The Contractor shall supply and erect all applicable and appropriate signage to the site. This shall include as a minimum all H&S signage, directions and location of site office and emergency contact details of the Contractor’s representative on site. Temporary warning signs and careful demarcation of works areas must be undertaken with care to ensure compliance with any and all requirements.

# **Workmanship.** Not withstanding any clauses in the Conditions of Contract or elsewhere in the Specifications or Scope of Works, the Contractor shall be responsible for ensuring that all work-related activities shall be carried out in a neat and workmanlike manner, in accordance with accepted good practice. The Contractor shall pay full attention to quality control and adherence to the specifications. Particular care shall be taken in respect to Health and Safety matters, which shall include the provision of any relevant temporary warning signs and safety barriers. All working areas are to be kept clean and tidy on a daily basis. All redundant materials must be cleared to the requirements laid down in the Authorities Environmental Regulations.

# **Site Manager.** At all times the Contractor shall have a Site Manager present on site that has the capability of reading, writing, speaking and receiving instructions in the English Language, including being able to understand and interpret technical drawings and specifications. This Site Manager must be able to explain the work operations to persons performing the work in a language that those performing the work are capable of understanding. The PM shall have the right to determine, whether the proposed representative has sufficient technical and linguistic capabilities.

# **Dust Protection.** The contractor shall ensure that all necessary dust control measures are taken to protect the personnel and equipment adjacent to the works site. This may include the following, but not limited to: Mechanical protection to equipment and personnel.

# **Visit to Site.** The Contractor shall acquaint himself completely with the exact conditions relating to access and site environment, along with the layout, conditions and positions of existing services, the full extent of the works required, and the supply and conditions affecting labour, carriage, carting, unloading, storage, tools, scaffolding, etc., as well as any security and access constraints.

# **Existing Record Drawings.** The Contractor will upon request, be supplied with copies of all available and relevant existing record drawings. The Contractor during tender stages shall fully acquaint himself with the nature and extent of all existing services within the area of the contract works.

# **Permits to Work and Authorisations.** The contractor shall comply with the Client’s permit to work system and the JSP 375, Volume 3, (details of which are obtainable from the Authority SO), including the provision of method statements, risk assessments, switching/isolating safety programmes, permit to dig, etc.

# The responsibility remains with the Contractor to obtain all necessary authorisations including but not limited to a permit to dig, security and access to the camp and site, fencing/screens to isolate runways, taxiways, and other existing facilities from the works, etc. required to commence and complete the works.

# The Contractor shall at all times ensure that full coordination, cooperation and liaising with the Superintending Officer of the Client and Authorities is achieved and maintained.

# **Site Instructions.** Where there is a change in design or specification, which does not have a cost or time implication a Site Instruction shall be issued by the SO to authorise the proposed change at nil cost to the Authority. The site instruction shall also be used to authorise a change in a specified material/item/equipment as long as the replacement meets the standards required by the original specification and is authorised by the SO.

# **Variation Order.** Where there is a change in design or specification, which does have a cost or time implication a Variation Order shall be raised by the Superintending Officer to describe the proposed change, this will have a cost implication to the Authority. The Works Contract Officer will issue the Variation Order to the Contractor for pricing; the Contractor will price the variation and return it to the Works Contract Officer. All Variation Orders must be authorised by the Project Manager, Financial Officer and issued via the Works Contract Officer prior to the commencement of any works on site. All Variation Orders are incorporated into the Contract by the issue of a Contract Amendment.

# **Rejection of Work.** The Authority reserves the right to reject or condemn any area of the works that he considers to be below an acceptable standard and the Contractor shall replace or repair the said works within 7 days of being notified in writing of the rejection by means of a Non-Conformance Report.

# **Operations and Maintenance Documentation.** Upon completion of the works the Contractor shall forward all manufacturers’ details relating to equipment/materials used to the Authority for inclusion into the O&M Manual/H&S File. Refer also to CDM 2015, this documentation less ‘As Built Drawings’ is to be made available at the Pre-Board of Officers not less than 10 days before the due project handover date. A full list of snagging items shall be produced and presented to the Authority with a rectification programme at this very same board.

# **Regulations.** It is the Contractors duty to be fully conversant with all local/MOD regulations and requirements in respect of fire, safety, security and occupational health, etc. These are to be fully complied with throughout the contract period.

# **Defects Liability Period.** A defects liability period of 12 months shall apply for the works. The Contractor will be responsible for making good at his own expense defects in the works for a 12 month period from handover.

Transportation and Tracking of Equipment

# It is expected that the Contractor will not require a forward resources area other than the site. Should one be required a location within an existing base area shall be made available, as agreed by the PM. Packaging shall be to a good standard capable of withstanding transportation and handling loads. The Contractor shall be solely responsible for storage and movement of all equipment to site. The Contractor shall remain at all times responsible for the security of equipment including prevention of theft.

Construction Preliminaries

# **Location Plan.** The location of the proposed works is within Price Barracks shown in the following drawings **DIO/BATSUB/BEL\_GE/G/001** and **DIO/BATSUB/BEL\_GE/G/016**. These drawings can be seen at Annex A.

# **Existing Ground Conditions**. **NOT USED**.

# **Obstructions.** As the proposed works are to be carried out in the existing compound and surrounding areas, there are obstructions in the form of fences and buildings, the contractor is to review the site before commencing works.

# **Provision of Information.** Unless otherwise specified the following is to be provided:

## copies of all information, including valid certification, in respect to work, goods and materials proposed by the Contractor, shall be supplied to the Authority in electronic and hard copy format. Where the original document is written in a language other than English, it shall be accompanied by an English translation.

## Information and certificates shall be supplied at least two weeks prior to the use of the work, goods or materials in the Works.

## Three copies of detailed working and fabrication drawings and calculations shall be submitted to the Authority for reference purposes. Such submittal shall in no way relieve the Contractor of his responsibilities for the work under the contract.

# **Health and Safety Restrictions, Precautions and Monitoring.** The Contractor shall implement the requirements described in the Health and Safety at Work Act 1974 (HASAW) to protect members of the public and persons visiting the site from risks arising from the use of equipment, materials or substances defined therein.

# **Control of Noise and Vibration.** The Contractor shall comply with the recommendations for practical measures to reduce noise set out in BS 5228: Parts 1, 2 and 4.

# **Construction Specification**

# **Preparatory Works.** The area is to be clear from rubble or debris prior to any works being carried out. The Contractor is to liaise with Authority to obtain a Statement of Known Services and copy to the Authority prior to the start of works. All local services are to be identified and adequate precautions taken to protect such services from damage for the duration of the works. The Authority must be informed immediately if any unknown services are discovered that will have an impact on the works.

# **Setting Out.** **NOT USED.**

# **Mechanical specification**

# **General**

# **Water Distribution. NOT USED**

# All supplied equipment shall be WRAS approved and in accordance with this specification. Design parameters. Install all domestic water services with the guidance contained in CIBSE TM13 'minimising risk of Legionnaires' disease' and HSE L8 legionnaire's disease-control of legionella bacteria in water systems. BS EN805:2000 Water supply – Requirements for systems and components outside Buildings and UKWIR Civil Engineering Specification for the Water Industry (Fifth Edition).

# The installation shall comply in all respects with BS 6700:1997 and the Water Regulations.

# **Water Supply**

# **Supply.** The water is to be supplied from Borehole pumps to the proposed raw water storage tank utilising the existing system, as per previous installation under the LCR contract. As built drawings of the previous system can be found at Enclosure 1.

# **NOT USED.**

# **Water Storage Tank.** The Contractor is to repair an exisiting 480m3 Raw water storage tank. The water storage tank shall be a sectional Glass Reinforced Plastic (GRP) hot press moulded externally flanged sectional tank. The internal tank dimensions shall be 12 x 10 x 4m. the raw water storage tank shall have an internal partition.

# The tank shall be connected at the inlet coming from Boreholes and the outlet is to be connected to the supply to raw water booster set pumps that supply the nano filtration system.

# The raw water storage tank Shall be mounted on 450mm Heigh minimum pier walls. the peir walls shall run at 1000mm centres parallel to width. The orientation of the pier walls / supporting steel and devider location arew critical and should match the original specification as the tank is specially designed.

# The raw water storage tank is to have the following in each internal partition:

## All stainless steel fixtures and fittings to be a minimum standard of 316 Stainless steel

## Outlets to be fitted with a vortex inhibitor.

## A lockable low level side entry access manway

## A 100mm dia drain – PN10 flange c/w spool piece & GMS backing ring.

## A 150mm dia outlet – PN10 flange c/w spool piece & GMS backing ring.

## A warning pipe – 1” pushfit screened fitting – Type R30E.

## An overflow – 150mm dia PN10 flange c/w screened overflow & dip pipe

## A 4” screened air vent.

## An airgap suitable for category 5 fluid.

## A clipped lid 1 x 1 m cover access panel.

## A float valve chamber – 1m x 1m x 400mm high clipped float valve chamber.

## An inlet – 3”PN16 EQU valve suitable up to 5 bar flanged c/w copper float, drop arm and flange spool piece.

## An internal ladder – 3765 internal rung ladder – GRP need 6 x BKT-867

## An external ladder – 4360 EFB caged 18 rung ladder c/w brackets – aluminium

## Hand rail – 1000mm x 1100mm high handrail – aluminium.

## A contents gauge – variable depth, pump up, content gauge suitable for tanks 3 m high and above.

## A high and low level switch boss – 1” FSB 146mm OD 110 PCD 6x15mm holes – Z005503.

## A temperature sensor boss – ¾” FSB 146mm OD 110PCD 6x15mm holes – Z005432

# **Pipework.** The new Polyethylene P100 pipework shall be high density Polyethylene 100 (MRS 10 MPa) suitable for SDR11 or SDR17.6 version

# The P100 pipework shall be manufactured in accordance to quality specification issued by DIN 8075 and dimensions according to DIN 8074. P100 pipework shall be suitable for temperature range -50˚C to 60˚C. EcoFIT (PE) fittings are to be ELGEF electro-fusion type made of PE100, metric sizes d20-1200 supplied by the pipework manufacturer. The dimensions shall fulfil the tolerance requirements of the standard EN ISO 15494. They shall be tested according to EN 10204.

# EcoFIT PE pressure / temperature curve shall be based on medium water, operating temperature of 20˚C, valid life time of 25 years and the design factor C=1.6

# The below table is for PE100 pipework.

# EcoFIT PE pipework shall require regularly spaced pipe supports. The bracketing distance depends on pipe diameter. The inner diameter of the support must be greater than the external diameter of the pipe, to allow for pipe movement during expansion / contraction.

# All support distances are based on fluids with a density the same as water, 1g/cm3.

# For other SDR, multiply the values given in the table with the following factor:

## SDR 17 / 17.6 with 0.91

## SDR 7.4 with 1.07

# The pipe bracket spacing given in the table may be increased by 30% in the case of vertical pipe runs, i.e. multiply the values given by 1.3.

# The expansion and contraction of ecoFIT PE pipes shall dependent on the liquid temperature, the ambient temperature and the change of both these temperatures.

# The eco FIT PE pipes shall be WRAS approved under approval number 1408504: ELGEF+ PE Electrofusion fittings and product approval 1209054: ELGEF+ Range of electrofusion fittings for use with PE100 pipework.

# The pipework shall be jointed using an electrofusion machine.

# To ensure that the electrofusion is satisfactory, the following equipment shall be required:

## Electrofusion machine

## - Pipe clamp

## - Pipe cutter

## - Peeling tool

## - Tangit KS cleaner and absordnet paper

## - Solvent resistant protecting gloves

## Felt tip or other marker

## For tapping saddles greater than d280, a top load assembly shall be used, this shall require a:

### top load tool

### Terminal adaptor pins may be required.

# Pipework and fitting shall be delivered bagged and labelled keeping the materials dry and clean ready for installation. The materials shall be easily identifiable and clearly marked along the length of the pipe and moulded into the fitting denoting the materials, size and pressure rating.

# It is recommended that equipment shall only be unpacked immediately prior to use.

# Recommended maximum stacking heights for non palette pipe storage of PE100 shall be 1m. The maximum height of stacked pipework on palettes and protected against sideways movement, shall be 50% more than the nominal stacking height.

# For connecting PE to uPVC, adaptors shall be required. All uPVC pipework, solvent etc shall be locally sourced.

# **NOT USED**

# Automatic air vents shall be provided at high points within the system, i.e. as the pipework cross the burn. The contractor shall indicate all low and high points and clearly indicate these on their installation drawings.

# All new plumbing pipework shall be pressure tested and witnessed by the Client.

# The repaired system shall be tested and commissioned.

# As the system shall operate at elevated pressures special (60 psi) care shall be take when working on the system.

# Testing, Commissioning and setting to work shall be in accordance with the original LCR Contract specification.

# **Workmanship**. The deconstruction is to be conducted in accordance with BS6187:2011. Site staff responsible for supervision and control of work are to be experienced in the assessment of risks involved and methods of deconstruction to be used.

# **NOT USED**

# **Unforeseen hazards**. On discovery, give notice immediately when hazards such as unrecorded voids, tanks or chemicals are discovered during deconstruction. Submit details of proposed methods for filling, removal, remediation, etc.

# **Supervision.** Strict supervision by the Contractor’s Site Manger is critical to the successful completion of the task. The Contractor’s Site Manager is to liaise with the PM and SO on a regular basis to keep all personnel informed and current with future works.

# **Inspection, Testing and Commissioning.** The installations shall be tested and inspected in accordance with but not limited to the current CIBSE Codes, IEE Wiring Regulations 18th Edition BS7671:2018+A2:2022 – Requirements for Electrical Installations, where appropriate, etc. Advance notice of tests shall be given (minimum of 7 days prior to notification). Test and inspection certificates are to be approved by the Authority, preferred document templates will be provided by the Authority on request. Test certificates shall serve as a record that the item referred to has been shown under test to meet the requirements of the specifications and of British Standards as applicable and shall be dated, numbered and clearly referenced to the item tested by means of serial, chassis or other manufactures reference number permanently marked in a conspicuous position.

# On completion, all original test and inspection certificates are to be provided to the Authority and included in the H&S file CDM 2015. All test instruments shall be provided by the Contractor. The calibration certificates for the testing of the equipment are to be available on request to be shown to the Authority for scrutiny. The Contractor shall ensure all calibrations are in date. The Authority reserves the right to have an independent electrician available during the test and inspection phase.

# Any defects of workmanship, materials or non-compliance with the specifications or other irregularities which become apparent during the tests shall be rectified by the Contractor, at his own expense, until the whole work is free from defects and in full working order to the complete satisfaction of the Superintending Officer.

# All materials used for construction of permanent works shall have suppliers’ specifications and/or testing certificates available. Where materials are used as part of a whole or in conjunction with other materials, and in any case where site testing is required by best practice, verification of quality and specifications should be allowed for the parts / items / products (suppliers’ specification) as well as the whole (site testing).

# **The Health and Safety (H&S) File.** The Contractor shall be required to complete the Project Health and Safety File on completion of the project and to present it to the Authority at handover in compliance with CDM 2015. The H&S File provides information required for future construction work, which includes cleaning, maintenance, alterations, refurbishment, and demolition.

# **Annexes:**

# A. Task location

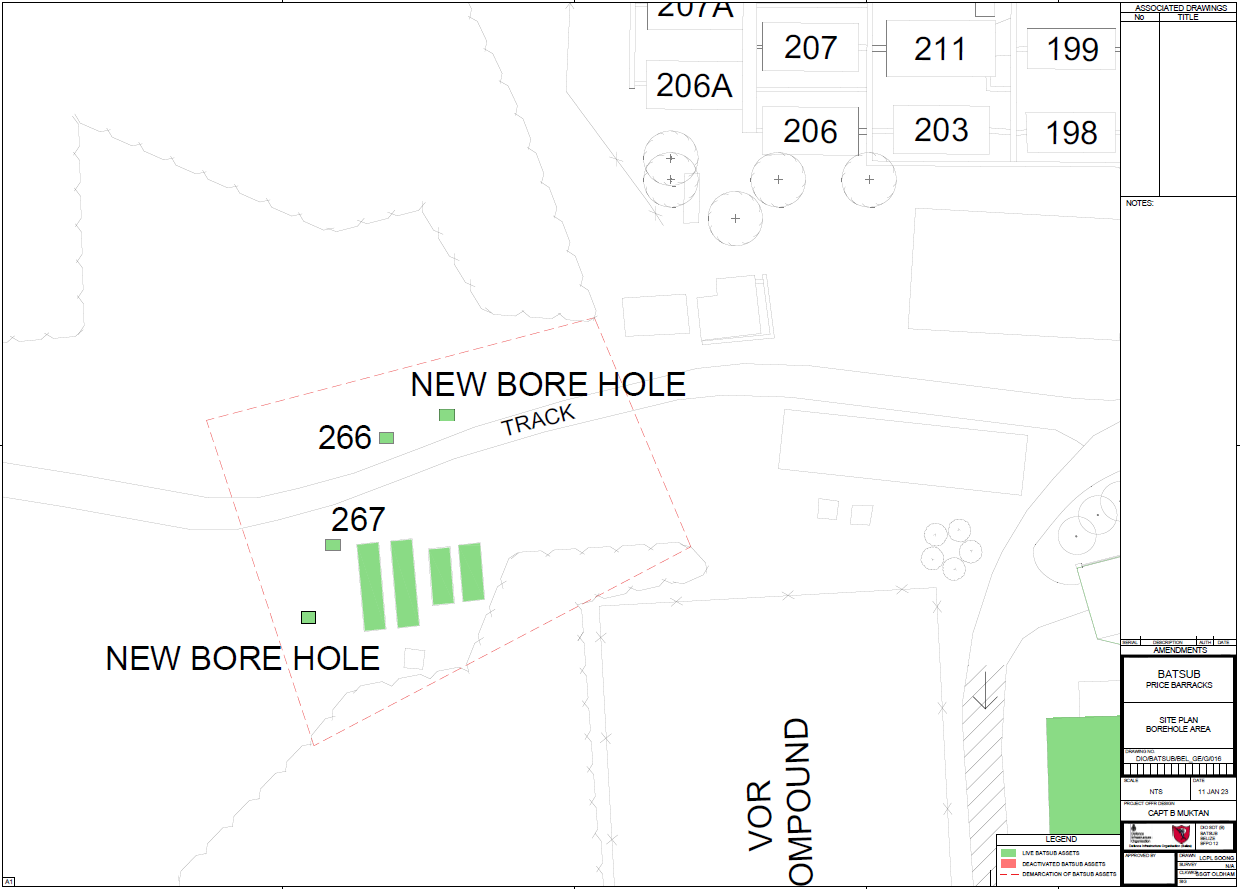
# **Enclosures:**

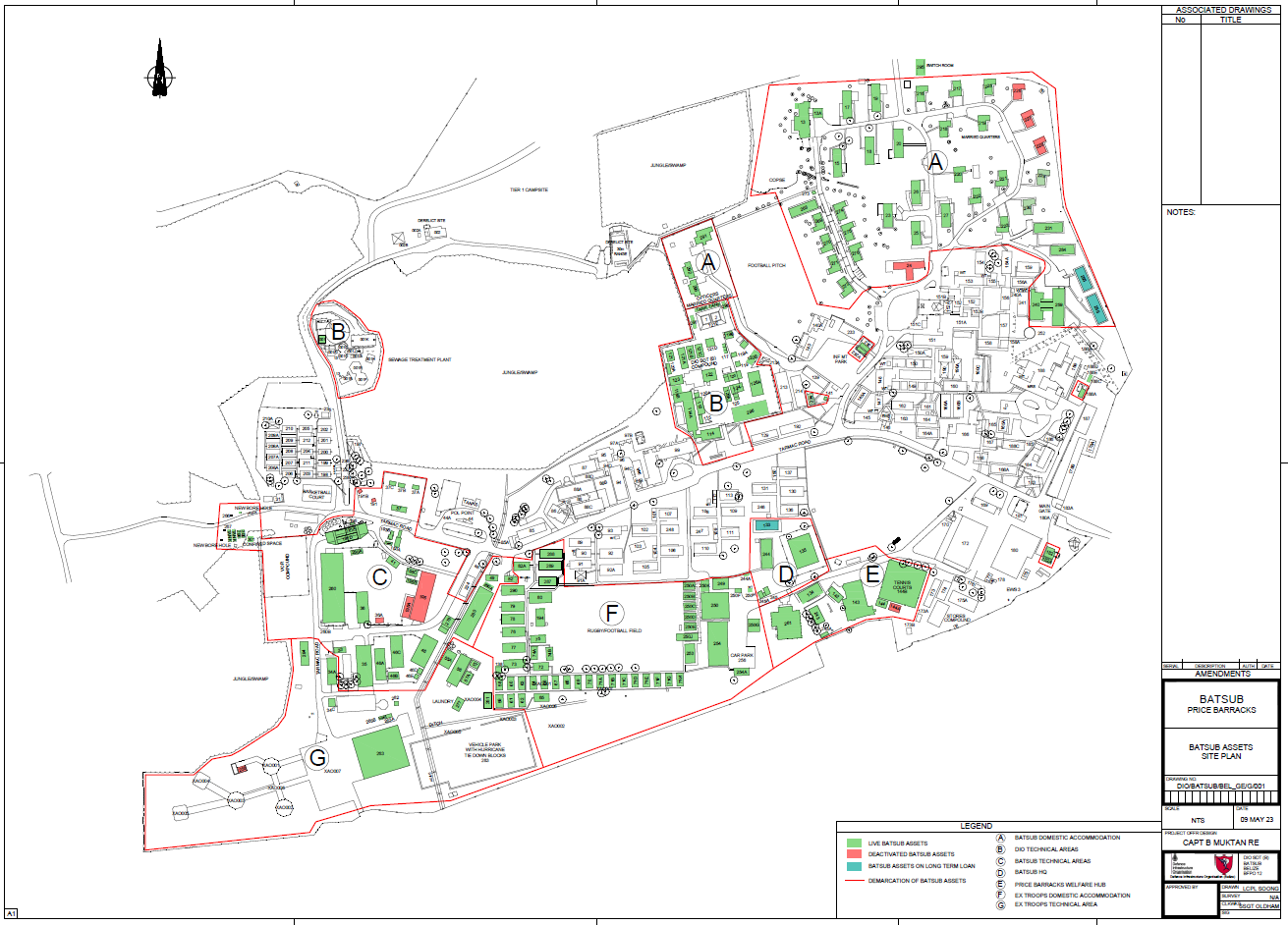
# 1. LCR Contract As built drawings.

**Annex A to**

**BEL/GE/2305**

**Dated 27 Mar 24**

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