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## **5 THE AUTHORITY'S OFFICE**

### **5.1 General**

- 5.1.1 The Contractor shall design, supply, install, equip and maintain the Authority's Office, temporary utilities, sanitary facilities, internal furnishing, fittings and equipment, as detailed below for the exclusive use of the Engineer and his staff, the QP(S) team, **the staff of Instrumentation and Monitoring specialist contractor (IM).**
- 5.1.2 The approximate locations of the Authority's Office and the Contractor's site offices are shown in the Authority's Drawings. The precise location of the offices shall be proposed by the Contractor and be subjected to the acceptance of the Engineer. The design for the Authority's Office and site offices shall be certified by the Contractor's Professional Engineer (PE) in relevant disciplines relating to building control and fire safety requirements and all necessary statutory approvals and permits shall be obtained by the Contractor. The lightning protection system for the Authority's Office must be certified fit for the purpose by the Contractor's PE.
- 5.1.3 The Authority's Office shall be located close to the Contractor's main site office and close to the Works. **External covered walkways shall connect the Project Office and the Contractor's Office at the ground level.**
- 5.1.4 All Authority's Office furniture and equipment shall be brand new when handed over to the Engineer. The final office layout shall be subject to the acceptance of the Engineer prior to construction. The selection and layout of all furniture, fittings and fixtures shall be submitted for acceptance by the Engineer before their fabrication and installation. The proposed office equipment shall also be submitted to the Engineer for acceptance.
- 5.1.5 The Authority's Offices shall be constructed as one of the first site activities and shall be ready for occupation, as soon as practicably possible, but no later than five (5) months after the award of the Contract. Construction of the Authority's Offices shall be defined in the Contractor's programme of works.
- 5.1.6 The Contractor shall provide two (2) temporary portable offices for the Engineer and his staff before the completion of the above offices. The temporary portable offices shall be to the acceptance of the Engineer. (refer to Table 5.13).

- 5.1.7 The Contractor shall supply, install, maintain, operate and decommission all services to the Authority's Offices. All costs shall be deemed included in the Contract Price. Such services shall include the following:
- a) Mains electricity (230V);
  - b) Mains water supply;
  - c) Mains sewer connection;
  - d) Sanitary and plumbing system;
  - e) Drainage;
  - f) Telephone system and telephones;
  - g) IT connectivity services and computer network services;
  - h) Lightning protection system;
  - i) Garbage/waste disposal;
  - j) Vector control and pest control on a weekly basis in accordance with the National Environment Agency (NEA)'s guidelines;
  - k) Air conditioning system and mechanical ventilation;
  - l) Audio and visual security system;
  - m) Closed circuit television (CCTV) system;
  - n) Auto detection motion sensors for lighting and fans in toilets;
  - o) Fire protection system; and
  - p) External door access security system.
- 5.1.8 The Contractor shall make provision for refreshments at all the Conference/Meeting Rooms and pantries. The replenishment of all refreshments and consumables shall be made in a manner acceptable to the Engineer. The Contractor shall make provision for consumables, soap, detergent, tissue paper, plastic bags for rubbish and rubbish containers, lighting bulbs and tubes necessary, potable water, refreshments, etc. for the entire period of the Works during office hours.
- 5.1.9 The Contractor shall maintain the Authority's Offices during the Contract period and provide cleaning services, including vacuuming on a daily, weekly basis or any other frequency as accepted by the Engineer. The level of cleanliness shall be subject to the Engineer's acceptance.
- 5.1.10 The Contractor shall ensure the following waste management strategies are implemented appropriately for Biodiversity:
- a) Comprehensive waste management system at the worksite to ensure proper disposal of waste;
  - b) Illegal disposal of construction waste shall be strictly prohibited;
  - c) Littering of food waste and food packaging shall be strictly prohibited and enforced by the Contractor;

- d) Disposal of construction wastes (wastewater and solid wastes) into streams, storm water channels or other waterbodies shall be strictly prohibited;
- e) The Contractor shall provide sufficient fully covered food waste bins that are secured in a manner that is wildlife-proof;
- f) All food waste shall be cleared from the worksite at least once a day;
- g) Where fauna is found to be active around waste disposal areas, the Contractor shall implement measures to reduce the source of the attractant in consultation with the Ecologist;
- h) The Contractor shall submit a Waste Management Plan as part of the contract-specific EMMP detailing the:
  - i. Types of waste generated
  - ii. Location and types of waste management facilities (e.g., food waste bins)
  - iii. Frequency of disposal
  - iv. Information of waste management contractors

5.1.11 The Contractor shall ensure the following vector management strategies are implemented appropriately for Biodiversity, where the hierarchy of vector control shall be as follows:

- a) Source reduction, i.e., eradicate water ponding through proper housekeeping to eliminate potential breeding grounds;
- b) Monitor Dengue situation, i.e., regular screening of worker (temperature checks), quarantine measures, etc;
- c) Deter breeding, i.e., search and destroy efforts, inspections, Bti application, etc;
- d) Thermal fogging shall not be carried out to prevent unintended impacts to invertebrate fauna residing in the surrounding habitats;
- e) No chemical insecticides, pesticides and rodenticides shall be used for pest control;
- f) No sticky traps shall be used for pest control.

5.1.12 The Contractor shall carry out preventive maintenance, servicing, repairs and necessary replacement of all associated building services and systems, furniture and fittings in the Authority's Offices. All office equipment supplied by the Contractor shall be kept fully functional, operational and safe for use.

5.1.13 Items originally supplied by the Contractor and damaged through wear and tear shall be replaced with new items or repaired to the acceptance of the Engineer at the Contractor's cost.

- 5.1.14 The Contractor shall allow for the payment of Temporary Occupation License (TOL) fees for the land parcel occupied by the Authority's Offices and other site offices (including but not limited to SWC offices, portable offices, QP(S) and IM site offices at any location), parking etc.) in his Contract Price and shall be responsible for making the necessary payments to the relevant authorities/land owners until such time the authorities/land owners agree to cease the collection of the payments from the Contractor.
- 5.1.15 The Contractor shall install and maintain hoarding of at least 2.4m height around the Authority's Offices, as shown in **Appendix Q of the Particular Specification**. In such case, the Contractor shall maintain the greenery in the vicinity of Authority's offices until the offices are removed from site and returned to the satisfaction of relevant agencies. The hoarding panels shall be white/green flat panel type to the Engineer's acceptance. The Contractor shall also provide at least two (2) lockable side gates with biometric security access control and a double leaf gate (at the main access) for pedestrian and vehicular access respectively. The locations of the gates shall be subject to the acceptance of the Engineer.
- 5.1.16 The Contractor shall ensure that the office environment is conducive for work.

- 5.1.17 The Contractor shall supply 24-hour full time security personnel to guard the Authority's Office up to the period stated in **Clause 5.11** of the Particular Specification herein, to the acceptance of the Engineer. The Contractor shall obtain the security personnel from a security company licensed by the Police Licensing Regulatory Department (PLRD) and the security company shall have at least a 'B' grading by PLRD in its annual grading exercise.
- 5.1.18 The Contractor shall design, construct and maintain guard posts and drop barriers at every ingress/egress to the Authority's Offices.
- 5.1.19 The guard post shall be provided with aluminium windows with glass panels, applied with solar film coating, to allow visibility on three (3) sides of the guard post. The guard post shall be equipped with adequate lighting, a wall mounted fan and air conditioning unit, two (2) nos. 13-amp power points, telephone outlet and telephone, lightning protection, a table and chair.
- 5.1.20 The layout of the Authority's Offices with respect to internal walls, partitions, windows, air-conditioning units, lighting, etc. shall be to the acceptance of the Engineer. Minor addition and/or re-configuration of the rooms / workstations at the Authority's Offices as and when required by the Engineer including but not limited to electrical, telephone and network point adjustment throughout the Contract Period shall be deemed included in the Contract Price.
- 5.1.21 The Contractor shall supply system furniture, internal walls and internal doors as necessary to suit the layout accepted by the Engineer. All internal doors for full height partitioned rooms shall be lockable with door closer, magnetic door holder and equipped with coat hooks, complete with stainless steel lockset with a minimum of three (3) keys. Visual glass panels shall be provided for the doors to meeting rooms and conference rooms.
- 5.1.22 All external entrance doors of the Authority's Offices shall be double leaf of minimum 1.8m width with half height tinted visual glass panels fitted with solar film. All external doors shall be complete with ironmongery, door closer, magnetic door holder, and stainless steel lockset with a minimum of four (4) keys.
- 5.1.23 The Contractor shall supply, install and maintain an electronic security system at all external entrance doors of the Authority's Office. The electronic security system shall be made operational by means of a card access system with numerical keypad/biometric scanner or other similar system acceptable to the Engineer. The system shall have contact switches on all external doors. Deactivation key shall be provided at the entrance doors.

- 5.1.24 The Contractor shall supply and install suitable lightning protection to the Authority's Office and sheltered car parks according to the requirements of Singapore Standard SS555 Code of Practice for Protection against Lightning. The lightning protection system shall be designed, supervised and endorsed by a Professional Engineer.
- 5.1.25 The Contractor shall provide continuous and uninterrupted power supply to the Authority's Office. The Contractor shall refer to the requirements of SPPA for the provision of a sub-station for load connections exceeding 280kVa (400A). However, the provision of a direct service connection is dependent on the available network capacity in the vicinity. If SPPA requires a sub-station to be provided to supply power for the Works, the Contractor shall do so at his cost and time including provision of all feeder cables and power accessories required for connection, connection charges and commissioning of the substation in compliance with Singapore Standard SS650: Code of Practice for Temporary Electrical Installations. Should the power supply to the Authority's Offices be unstable, the Contractor shall provide UPS (uninterruptible power supply coupled with surge protector) to all computers, IT equipment and office equipment.
- 5.1.26 The supply and installation of computer network points/ports including all associated cabling for the Authority's Office shall be carried out by the Contractor. The Contractor shall provide the IT infrastructure as specified, such as provision of required openings to the office rooms, computer distribution room, meeting rooms and workstations for the installation works.
- 5.1.27 Proper management of the wires shall be considered in the workstation and desk design to provide logical organisation of wiring for computers, printers, telephone systems, etc., and suitable openings and cable ducts shall be provided for integration of wires at the workstations and desks.
- 5.1.28 All upper floors shall have a suitable, heavy-duty carpet flooring or with similar underlay while the ground floor shall have suitable, heavy-duty vinyl floor covering or similar, all which shall last the duration of the Contract. Any damaged floor covering shall be replaced promptly and not exceeding two (2) weeks by the Contractor at his own cost. The Contractor shall provide regular maintenance of the floor covering to the acceptance of the Engineer.
- 5.1.29 All windows shall be tinted and fitted with solar film and roller blinds. All external windows and entrance doors with glass panels shall be provided with solar film coating.

- 5.1.30 Project office signboards and signage shall be provided for the Authority's Office. The Contractor shall propose the design and locations of the signboard and signage for the Engineer's acceptance. Name plate signs for all the rooms and workstations shall be provided. The Contractor shall provide additional or updated name plate signs as and when requested by the Engineer throughout the Contract duration.
- 5.1.31 The Contractor shall submit samples of materials, components, fixtures, fittings etc. proposed for the Authority's Engineer's Offices such as carpet, vinyl tiles, laminates, blinds, furniture as and when requested by the Engineer. A colour chart of various material shall be submitted when requested by the Engineer.
- 5.1.32 The Contractor shall supply and maintain an appropriate number of fire extinguishers, a fire bell, smoke detectors and other appliances to be fitted at strategic locations within the Authority's Offices, and include escape route plans, which comply with Fire Safety & Shelter Department's (FSSD) requirements to the acceptance of the Engineer.
- 5.1.33 The Contractor shall design, supply, install, test and commission, maintain the lighting system, including emergency and exit lighting, in accordance with local codes and regulations including the Fire Code, SS 563 Code of Practice for the Design, Installation and Maintenance of Emergency Lighting and Power Supply Systems in Buildings, and SS 531 Code of Practice for Lighting of Work Places – Indoor.
- 5.1.34 Energy efficient LED (light-emitting diode) luminaires lighting system, including emergency lighting system shall be designed and provided at the Authority's Offices. Light fittings at all areas shall be selected to match the architectural design and finishes. The light fittings and all associated accessories shall be subject to the Engineer's acceptance.
- 5.1.35 Any broken light fittings or faulty light shall be replaced promptly by the Contractor.
- 5.1.36 The energy consumption of the lighting system shall comply with SS 530 Code of Practice for Energy Efficiency Standard for Building Services and Equipment and shall not exceed 8 W/m<sup>2</sup>. Provisions for energy audit shall be incorporated in the lighting design.
- 5.1.37 The lighting level at the workstation level shall not be less than 500 lux.
- 5.1.38 Lighting system design shall take into consideration functional aspects, energy efficiency, aesthetics and maintainability. The type of light fixtures to be used at all areas shall be subject to the acceptance of the Engineer.



- 5.1.39 Lighting at the general office area and common corridor area shall be designed with separate switching control. Where there is more than one (1) entrance to any room, two-way switches shall be provided for convenient switching from each of the entrances.
- 5.1.40 There shall be sufficient external lighting and anti-skid floor treatment to ensure safe movement by staff, particularly on stairs, near steps and on walkways.
- 5.1.41 All external corridors and covered linkways shall be provided with alternate circuiting complete with timer control to enable 50% of the circuits to be switched off after a pre-set time.
- 5.1.42 All components within the lighting fixtures shall preferably be from the same manufacturer to ensure compatibility. All similar items of equipment shall be interchangeable.
- 5.1.43 The guaranteed minimum life expectancy of the LED lamp shall be L70/B50 at 50,000 hours.
- 5.1.44 The LED fixtures shall be of modular type. Care shall be taken with regard to the uniformity of lighting levels.
- 5.1.45 Weatherproof light fittings to IP 65 shall be provided for outdoor areas, car park areas, walkways, roof, etc.
- 5.1.46 All wiring to light fittings shall be enclosed within GI conduits. All terminations to light fittings by GI conduits or flexible metallic conduits shall be made with proper termination kits for a watertight finish.
- 5.1.47 All suspended fittings shall be securely fixed to the ceiling using down rods with conduit terminating boxes.
- 5.1.48 All recessed fittings shall be supported independently. False ceiling grid system shall not be used to support light fittings. All fittings shall be adjusted so that there is no noticeable ceiling deflection when the fittings are installed. The fittings shall be directly secured to the soffit of the main frame by means of GI wires tied to metal studs.
- 5.1.49 Occupancy sensor controls complete with local bypass switch shall be provided for all lighting in toilets. The exhaust/oscillating fans serving the toilets shall be interlocked with the toilet lighting circuit.
- 5.1.50 Dimming system shall be provided for the lighting system in conference rooms and meeting rooms.

- 5.1.51 The compound of the Authority's Offices shall be fully paved in concrete including the car parking area and driveway which may be premixed subject to Engineer's acceptance. All car park lots shall be fitted with concrete vehicle stoppers and shelters. Those car park lots adjoining the buildings shall have covered shelters.
- 5.1.52 The Contractor shall ensure that the compound of the Authority's Offices is constructed to fall and adequately served by a drainage system. The drainage system shall be maintained regularly for the whole duration of the Contract.
- 5.1.53 Walls and floors of pantries and toilets shall be waterproofed and tiled to a minimum height of 2 metres. The toilets and pantries shall be well ventilated and cleaned daily.
- 5.1.54 The floors in contact with the ground shall be laid with an effective moisture separation layer to the underside of the floor to prevent migration of moisture from the ground into the rooms.
- 5.1.55 The Contractor shall supply **one (1) compressed air and three (3) water boot cleaners and a suitable drain pit at each of the Authority's Offices.** A wash bay served with a separate Public Utilities Board (PUB) water supply with **three (3) tap points shall be provided outside each of the Authority's Offices. There shall also be one (1) separate water supply tap and suitable drainage.**
- 5.1.56 The Contractor shall provide and maintain waste bins and recycling bins at the Authority's Offices.
- 5.1.57 All existing footpaths or covered linkways affected by the Works shall be provided with replacement/alternatives. The Contractor shall note that the existing covered linkway may require to be retrofitted with high covered linkway to allow for staff and vehicular access into the Authority's Office area. The Contractor is to provide temporary covered linkway and footpath during the retrofitting works. The retrofitting works are to be performed to the acceptance of the Engineer and to be deemed included in the Contract Price.
- 5.1.58 The Contractor shall provide mechanical ventilation at strategic locations to ensure sufficient circulation of fresh air into the site office to the acceptance of the Engineer.
- 5.1.59 The Contractor shall note that any existing mature trees located within the compound of the Authority's Offices shall be protected in accordance with NParks' requirements. The Contractor shall be responsible for the regular upkeeping and pruning of the trees to the acceptance of NParks and the Engineer.

- 5.1.60 The Contractor shall supply, install and maintain an external CCTV system with a minimum of six (6) nos. CCTV cameras placed strategically at multiple locations to provide coverage of the external area of the Authority's Offices and its entrances/exits. The locations of the CCTV cameras shall be coordinated and submitted to the Engineer for acceptance.
- 5.1.61 The CCTV cameras shall be capable of being installed and operated in an external/outdoor environment and protected against weather conditions, complete with remote pan/tilt/zoom control to give sufficient coverage for the entire external area of the Authority's Offices.
- 5.1.62 The CCTV system shall be web-based interface with provisions for multiple accesses by personnel authorised by the Engineer. The real-time video images received shall be of good quality with resolution acceptable to the Engineer. The video signals from the cameras shall be relayed to the security guardhouse or any other locations directed by the Engineer.
- 5.1.63 The Contractor shall also set up computer(s) to store all the data recorded in a local server located in the Authority's Offices. The local server shall be able to retain the CCTV recording for a duration of at least three (3) months. The recorded data shall also be storable on hard disk for future reference. The hard disk shall have storage capacity for at least one (1) month of video recording. All recordings are the property of the Authority and no copy, distribution or use of the footages/recordings by the Contractor is allowed without the written consent of the Authority and/or the Engineer.
- 5.1.64 The Contractor shall supply and maintain air purifiers in the Project Office, subject to the acceptance of the Engineer. The air purifier shall meet the requirements stated in the following table:

	Description
1.	High efficiency particulate absorbing (HEPA) filter equipped
2.	Clean air delivery rate (CADR) of 270 ft <sup>3</sup> /min or 460 m <sup>3</sup> /hour or equivalent
3.	Ozone/ionizer function can be turned off

- 5.1.65 Any breakdown of the air purifier shall be repaired/replaced promptly.

## 5.2 Project Office

- 5.2.1 The Project Office building shall be at least two (2) storeys high, with a total combined area of not less than 900m<sup>2</sup> excluding car park area and external staircase. The building shall be well constructed and weather tight with rigid and robust floors (minimum 30mm thick) using galvanised steel floor decking support which have minimal sound and vibration transmission designed to last at least for a ten (10) years life span. Walls and roof shall be designed to minimise heat transmission and be sufficiently soundproofed so as not have a drumming effect when it rains. Ceiling finishes shall be provided.
- 5.2.2 There shall be a minimum of two (2) external staircases with intermediate landings, which shall be covered for protection against the weather. All steps on the staircases shall have luminous non-slip strips of at least 25mm wide along the full width of the step. There shall be one (1) internal staircase leading from the ground level to the upper levels. This internal staircase shall be fitted with a solid door at each level with half height visual glass panel complete with ironmongery and lockset. This internal staircase shall be carpeted. All exposed sides and undersides of the staircases shall be covered and maintained throughout the duration of the Contract.
- 5.2.3 The Project Office (excluding QP(S) Office and IM Office) shall include rooms with sizes as stated in the following table:

	Description	No.	Internal Area (m <sup>2</sup> )
1	Office room Type 1	9	12
2	Workstation with 1.4 m high partition	16	6
3	Conference room	1	50
4	Meeting room	3	25
5	Computer distribution room	1	15
6	Multipurpose Room	1	10
7	Drawing/Document/Filing room	2	15
8	Photocopy/Faxing/Printing area	1 per storey	10
9	Pantry	1 per storey	20
10	Reception Area	Refer to Clause 5.2.10 of Particular Specification	
11	Store room	2	7
12	Surveyor cum Equipment Room (refer to Clause 5.2.11)	1	10
		1	24
13	Sample room (Archi)	1	15

	Description	No.	Internal Area (m <sup>2</sup> )
14	Sample room (core boxes)	1	35
15	Consumer Switch Room	1	10
16	Remote Monitoring System Control Centre (to be located next to the Conference room)	1	40
17	Toilets and Changing room	As specified in Clause 5.8	

- 5.2.4 New office furniture and equipment shall be supplied, installed and maintained by the Contractor and will be the asset of the Authority. They shall only be disposed of upon the Engineer's request. The Contractor shall provide system furniture that is of reasonable quality and sufficiently robust for use in a construction site office environment. The costs of operating, maintenance, and replacement if any of all equipment supplied are deemed included in the Contract Price.
- 5.2.5 For all workstations (except those for QP(S) office and IM office), the following shall be provided:
- two (2) twin socket electricity supply of 230V above height of table-top; and
  - All partitions for workstations shall be of modular system.
- 5.2.6 The Contractor shall provide network points for office equipment such as photocopier and laser printer. The Contractor shall also provide any additional network points upon the Engineer's request and at the Contractor's own cost.
- 5.2.7 Wire management capability shall be considered for the individual workstations and meeting room tables design for the logical organisation and wiring for computers, printers, telephones etc. Suitable openings shall be provided for integration of wires in the workstation and meeting rooms tables.
- 5.2.8 The Conference Room shall have two (2) network points.
- 5.2.9 The Contractor shall provide an additional thirty (30) twin electrical sockets for use by electrical appliances such as photocopiers, printers, fridges, projectors, etc. distributed on all levels as required by the Engineer.
- 5.2.10 The Contractor shall set aside an appropriately furnished area in the Project Office as a reception area for guests or visitors. The reception area shall have a minimum area of 9m<sup>2</sup> and furnished with necessary furniture, fittings, etc. as specified in Table 5.9.

- 5.2.11 The survey team rooms comprising of one 10 m<sup>2</sup> room and one 24 m<sup>2</sup> room shall be provided at the ground floor and shall be suitable for four (4) staff [one (1) at 10 m<sup>2</sup> room, the other three (3) and one (1) survey equipment safe at 24 m<sup>2</sup> room]. The rooms shall have desks, pedestals, chairs, filing cabinets, computer ports and power sockets for each desk and additional power sockets for equipment charging. The room shall be located near to an entrance/exit.
- 5.2.12 The Remote Monitoring System Control Centre shall have a combined area not less than 40m<sup>2</sup> and shall be furnished with the requirements stated in Table 5.16. The Remote Control Centre shall be partitioned by properly designed half height glass panel such that it is independent function from the viewing gallery areas. Apart from the monitoring of Tunnel Boring Machines (TBM) and tunnel drives at Satellite Office as per **Appendix P1** of the General Specifications, **the TBM and tunnel drive monitoring shall also be integrated within the Remote Control Centre at the Authority's Office.** The Contractor shall propose the layout of the Remote Control Centre for the Engineer's acceptance. **The Remote Control Centre shall be erected and ready for operation within five (5) months from the award of the Contract.** All costs relating to the setting up of the Remote Control Centre, including maintenance and daily operation shall be deemed included in the Contract Price.
- 5.2.13 The Contractor shall provide **a mobile interactive digital LED touchscreen that is at least 70" and can be transferred between various locations** within the Project Office including manpower and equipment to transfer/relocate the touchscreen as and when directed by the Engineer. The screen shall be mounted on a mobile stand with a dedicated rack for desktop CPU. The design of the mobile stand shall be subject to the Engineer's acceptance.
- 5.2.14 The screen shall also be minimally equipped with the following features:
- a) Supports multi-touch of at least 20 points;
  - b) Resolution of at least 1080p;
  - c) Wide viewing angle;
  - d) Supports both wireless or wired connections; and
  - e) Compatible connections to Windows OS and equipped with webcam/conference camera with:
    - i. at least full HD 1080p resolution video quality.
    - ii. omnidirectional microphone/s with pick up range of at least 4m diameter.
    - iii. high performance speaker for video conferencing.

- 5.2.15 The QP(S)' Office shall be provided at the ground floor of the Project Office and shall include the following rooms with the sizes stated:

	<b>Description</b>	<b>No.</b>	<b>Internal Area (m<sup>2</sup>)</b>
1.	Office Room	4	10
2.	1.4m high partition workstation	18	6
3.	Drawing Viewing Area	1	20

- 5.2.16 The QP(S)' Office shall be partitioned such that it is independent from other rooms and common areas. The QP(S)' Office shall have a separate entrance/exit on the ground floor.

- 5.2.17 Each workstation in the QP(S)' Office shall have the following:-
- a) two (2) twin socket electricity supply of 230V above the height of table-top; and
  - b) All partitions for work stations shall be of modular system.
- 5.2.18 The Contractor shall provide in the QP(S) Office an additional five (5) twin electrical sockets for use by electrical appliances such as photocopiers, printers, etc.
- 5.2.19 The IM Office shall be provided at the ground floor of the Project Office with a separate entrance/exit door. There shall be no doors connecting it to the rest of the building. It shall be a 30m<sup>2</sup> room with furnished with the requirements stated in Table 5.15.
- 5.2.20 There shall be three (3) workstations in the IM Office, with the following provisions for each workstation:
- a) two (2) twin socket electricity supply of 230V above the height of table-top; and
  - b) All partitions for workstations shall be of modular system.
- 5.2.21 The Contractor shall provide an adequate and convenient space for the setup of the specialist contractor's computer and instrumentation monitoring system. The space shall be coordinated and agreed with the specialist contractor prior to the installation of their equipment.
- 5.2.22 The Contractor shall take full responsibility for the care of the specialist contractor's computer and instrumentation monitoring system housed in the IM office. In the case of damage or loss to the aforesaid computer or monitoring system caused by the Contractor or any person for whom the Contractor is responsible including the Contractor's servants or agents or any subcontractor's and their servants or agents, the cost of making good such damage or loss shall be recoverable by the Authority from the Contractor.
- 5.2.23 The Contractor shall design and construct a shed for the **storage of soil samples within the Project Office's compound.** The shed shall be approximately 27m long x 7m wide x 3m high with chain-link fencing surround, with a roof, single leaf lockable gate, complete with electrical lighting and power, and **sixty (60) numbers of soil sample storage racks.** The Contractor shall obtain all the necessary PE endorsement and submit the design and detailed proposal for the Engineer's approval prior to construction.
- 5.2.24 The Contractor shall also carry out relocation of the soil samples to a new shed and subsequent removal of the shed, including disposal of all unwanted materials when requested by the Engineer.



**5.3 Portable Office**

- 5.3.1 In addition to the Authority's Office described above, the Contractor shall supply at least three (3) Portable Offices as described below, to the acceptance of the Engineer. All costs associated with TOL and the supply of the Portable Offices, including operating, maintenance and removal costs shall be deemed included in the Contract Price.
- 5.3.2 The Portable Offices shall be located on firm level foundations at locations to the acceptance of the Engineer.
- 5.3.3 The Portable Offices shall be relocated by the Contractor as and when requested by the Engineer during the course of Works, as the work areas move or develop. All associated costs arising out of this relocation shall be deemed included in the Contract Price.
- 5.3.4 Each Portable Office shall have a minimum area of 12m<sup>2</sup>.
- 5.3.5 The Portable Offices shall be furnished with the requirements stated in Table 5.13.
- 5.3.6 The Portable Office shall be watertight and shall have air-conditioning, 230V electrical supply, suitable lighting, vinyl flooring or similar, lockable doors and lightning protection.
- 5.3.7 The Contractor shall clean and maintain the Portable Offices and replenish the consumables on a daily basis or when required.
- 5.3.8 All windows shall be covered with security grilles to the acceptance of the Engineer.
- 5.3.9 The Portable Offices shall be brought to site within two (2) weeks of being requested by the Engineer. The Portable Offices and their contents shall be new on handing over to the Engineer.
- 5.3.10 The Contractor shall, in addition to the above, supply and maintain toilets and washroom facilities for the exclusive use of the Engineer's staff. Such facilities shall be proposed by the Contractor for the Engineer's acceptance.

**5.4 Telephone System**

- 5.4.1 The Contractor shall supply, install and maintain a telephone system each for the exclusive use of the Authority's Office. The telephone exchange box shall be located within the respective offices and shall be maintained by the Contractor.
- 5.4.2 The telephone system shall include sufficient number of telephone sets to support the Conference room of the Authority's Offices including the Project Office, to the acceptance of the Engineer.
- 5.4.3 The telephone system shall enable:
- a) direct dialling of outgoing calls from all telephones;
  - b) direct incoming calls to each telephone;
  - c) intercommunication between all telephones;
  - d) use of a "nominated" telephone for receiving all telephone calls, if desired;
  - e) display of incoming calls; and
  - f) speakerphone function.
- 5.4.4 In addition to the telephone system, the Contractor shall also supply, install and maintain one (1) direct line for overseas call.
- 5.4.5 The Contractor shall supply the above telephone system, including sufficient number of telephone sets, to the acceptance of the Engineer.
- 5.4.6 All costs associated with the telephone system including operating costs shall be deemed included in the Contract Price.

**5.5 IT Requirements**

- 5.5.1 The Contractor shall make the necessary modification or upgrade to the hardware and software indicated above to comply to the Authority's internal IT or WOG IT protocols in the event the Authority requests for connection to Authority's or any WOG or WOG-owned network.
- 5.5.2 The Contractor shall refer to **Appendix T** of Particular Specification for the IT connectivity requirements for the computer distribution room, network connectivity, cabling, router specifications and switch specifications.
- 5.5.3 The Contractor shall ensure that a continuous stable and adequate supply of electrical power is provided to all IT equipment within the office including the computer distribution room.

- 5.5.4 The telecommunications DB box shall be located in the proposed computer distribution room. This shall be installed and maintained at the Contractor's cost, which shall include one-time installation charge, monthly subscription and all works involved to facilitate the installation of the telecommunication service.
- 5.5.5 The computer distribution room shall be located in a secure room with no windows and a solid lockable door. The computer distribution room shall be equipped with the requirements stated in Table 5.11. Air-conditioning to this room shall be made available 24 hours a day. The computer distribution room may not necessarily be located on the ground level of the Office. The Contractor shall make all the necessary provisions in the event that the Engineer decides to locate the computer distribution room on the upper level of the Office.
- 5.5.6 For IT cable drop-down where there is no wall, either a metal trunking or PVC/metal casing shall serve as a drop-pole from which the horizontal network cable runs will channel the cables into the nearest system furniture.
- 5.5.7 The Contractor shall provide the required openings and trunkings (either metal or PVC) for the sole purpose of running computer cables and/or data communications cables between floors or Office as instructed and agreed upon by the Engineer and/or the Authority (where applicable).

5.5.8 The common notebooks shall comprise of following minimum specifications:

- a) i7-5600U Processor;
- a) (4M Cache, up to 3.20 GHz);
- b) 16GB DDR3L SDRAM Memory;
- c) 512GB SSD;
- d) 15.6" Display, 1366 x 768 (HD), anti-glare;
- e) Integrated 10/100/1000 Gigabit Ethernet;
- f) Integrated VGA / mini-Display Port;
- g) Integrated Webcam;
- i) Smart Card Reader;
- j) Integrated WLAN 802.11 ac/a/b/g/n + Bluetooth v4.0;
- k) Power Adaptor;
- l) Optical Mouse;
- m) DVD combo;
- n) Notebook Carrying Case;
- o) 24 inches LCD monitor;
- p) Latest version of Microsoft office;
- q) Anti-virus software;
- r) Latest Windows operating system with latest patches;
- s) Internet access
- t) Physical key lock for the notebooks; and
- u) All hardware and software with warranty and maintenance with the duration of the site existence.

### **5.5.9 BIM Workstations**

5.5.9.1 The Contractor shall provide the following to the project office to facilitate The Engineer's review of Contractor's works and submissions:

- a) Minimum of two (2) workstations and two (2) licence of all BIM software used by the Contractor to create the BIM models for the project for the entire duration of the Contract. The Contractor shall ensure that the workstations are security-safe for modelling and storage.
- b) Workstation shall include other software and accessories necessary for review of the Contractor's works and submissions, including but not limited to Anti-virus, Microsoft Office, Adobe Acrobat.
- c) One (1) 1TB external portable hard disk to facilitate the transfer of files between the Authority's machines and the modelling workstations.
- d) Maintenance, warranty, patching and all software upgrade within the stipulated period and upon request of the Authority.
- e) A contact person for the support of the BIM workstations.

5.5.9.2 By the end of the Contract, the BIM workstations shall be decommissioned and removed from the premises. The Contractor shall permanently remove all the project data and documents from the BIM workstations. Proof of the removal shall be submitted to the Authority upon request.

#### **5.5.10 IT Requirements for Others**

5.5.10.5 The Contractor shall coordinate with the QP(S) team and the IM specialist contractor on their requirements for the telecommunications/Wide Area Network (WAN) services on the ground level of the Engineer's Office. The telecommunications/WAN services for use by the QP(S) team and the IM specialist contractor shall be provided by the Contractor throughout the duration of the Contract. The telecommunications/WAN services shall be independent from that used by the Engineer's Office.

#### **5.6 Air-Conditioning System**

5.6.1 All rooms shall have air-conditioning. Air conditioning equipment for each room shall be well-sized to maintain full comfort conditions at all times. Air conditioning equipment shall be regularly serviced and maintained, to manufacturer's requirements. It shall be replaced with a new air conditioner when it is not functioning properly. Compressors are to face away from where people walk and positioned to facilitate safe maintenance. The Contractor shall carry out regular maintenance of the air-conditioners to keep it in good serviceable condition and maintain good indoor air quality that is in accordance with BCA guidelines. The following types of air-conditioning shall be provided:

Area	Type
Full-height partitioned rooms	Wall-mounted air-cooled split type air conditioners
Open Office Areas	Ceiling cassette air-cooled split type air conditioners.

- 5.6.2 The following conditions shall be used for the design of air-conditioning system unless otherwise recommended by the equipment supplier and accepted by the Engineer:
- Outdoor Air Condition: 32°C DB, 26°C WB
- Indoor Air Condition: 24°C, 60% RH  
(Offices, meetings, staff occupied rooms)
- 25°C, 60% RH  
(Electronic equipment rooms)
- 5.6.3 The Contractor shall provide for fresh air system for all air-conditioning space to improve the air quality of the office. Fresh air shall be provided for all air-conditioning space by means of fan and ductwork. The fresh air fan operation shall be controlled by programmer timer. The fresh fan shall be installed outside the air-conditioned areas.
- 5.6.4 The Contractor shall submit heat load calculations using software that is validated and widely accepted in the industry e.g. Carrier E-20 or equivalent, to demonstrate the adequacy of the air-conditioning system design and equipment selection. The cooling capacity of the equipment selected shall be upsized at least 10% to take into account reduction of equipment efficiency due to aging.
- 5.6.5 Air-conditioning loads shall be based on the heat load of occupancy, lighting, equipment, fresh air and all other internal/external sources.
- 5.6.6 The Contractor shall provide sufficient thermal insulation at the wall, floor and ceiling of 24 hours air-conditioned rooms, including the guard post, to prevent condensation at adjacent rooms. The Contractor shall submit calculations to demonstrate the adequacy of the insulation.
- 5.6.7 All louvers exposed to external shall be weather-proof type and outfitted with insect screen.
- 5.6.8 Unless otherwise specified, louvers, diffusers, registers and grilles shall be made of extruded aluminium with baked enamel finish to a colour

subject to the Engineer's acceptance. Gaskets should be provided to obviate any air leakage.

- 5.6.9 The compressors of all air-conditioning units shall come with a 5-year warranty by the manufacturers and of the same brand type.
- 5.6.10 Air purging system shall be provided for all air-conditioning area. The air purging system shall be able to introduce outdoor air into the space and then discharge the indoor air to outside the building at a minimum rate of 2 air-changes per hour. The capacity of the exhaust air fans shall be higher than the flow rate of the outdoor air introduced into the space.
- 5.6.11 The design, installation, testing and commissioning of the air-conditioning system shall comply fully with the following standards, government and statutory requirements:
- a) Singapore Standard CP13: Code of Practice for Mechanical Ventilation and Air-conditioning in Buildings;
  - b) Singapore Standard CP5: Electrical Installations; Code of Practice for Fire Precautions in Building;
  - c) Building Control Regulations;
  - d) Guidelines for Good Indoor Air Quality in Office Premises issued by the Ministry of the Environment;
  - e) Singapore Standard SS 530: Code of Practice for Energy Efficiency Standard for Building Services and Equipment; and
  - f) Other relevant standards by the Enterprise Singapore, other government and statutory authorities.
- 5.6.12 After completion of installation, the air conditioning system shall be tested to ensure that performance criteria e.g. airflow, noise level etc. can be met.
- 5.6.13 Any breakdown of the air conditioning system shall be repaired/replaced promptly.
- 5.7.14 In addition to air conditioning system as specified, wall or ceiling fans shall be provided in the pantry, internal corridors and open cubicle areas etc.
- 5.7 Toilets and Changing Rooms for the Authority's Office**
- 5.7.1 The Contractor shall design, supply, construct and maintain the toilet facilities to the Authority's Offices, for both male and female persons, for exclusive use by the Engineer's staff as per Tables 5.9 and 5.10. The

layout of the facilities shall be suitable for the number of staff in the Authority's Offices and shall be to the acceptance of the Engineer.

- 5.7.2 The floors and lower levels of the walls shall be tiled for ease of cleaning and to prevent damage caused by water. The toilets and the changing rooms shall be cleaned on a daily basis.
- 5.7.3 Mechanical ventilation system and propeller fans shall be provided for all toilets. Motion sensors shall also be provided in the toilets to reduce power consumption for lighting.
- 5.7.4 Each water closet (WC) cubicle shall have its own floor trap to drain water away. Each WC cubicle shall have its perimeter floor kerb. All WC cubicles are to be fitted with door hooks, a bib tap and a hose attached.
- 5.7.5 A minimum of three (3) male and two (2) female shower rooms with individual floor trap shall be provided on each floor, with hot and cold water supply and a "mixer" control tap, and doors with sufficient coat hooks with regular inspection and maintenance by licence electrician as accepted by the Engineer. Water flow in each shower, shall be a minimum of 0.5 litres per second. Each shower cubicle shall be equipped with sufficient soap/shampoo holders and clothes hangers. Each changing room shall also be equipped with automatic hand dryers, air fresheners, wall fans, bench and coat hooks. The Contractor shall also provide a kerb within the shower cubicle and water shall be made to fall and be drained off the cubicle.
- 5.7.6 The Contractor shall supply and install twenty (20) metal lockers (each two door double-tier with individual lockset and keys) at each of the Authority's Offices, each 1800mm (H) and 400mm (W) x 600mm (D), all raised at least 100mm off the ground. The lockers shall be divided between the male and female toilets, as accepted by the Engineer, prior to construction of the facilities.
- 5.7.7 All WC and shower cubicles shall be of modular system.

## 5.8 **Car Park**

- 5.8.1 The Contractor shall provide a paved area, concrete or hot rolled asphalt, with proper drainage outside the Authority's Offices, to be used as a car park exclusively by the Engineer and his staff.

- 1.0 The Contractor shall refer to **Table 5.8 for the number of car and motorcycle parking lots outside the Authority's Offices**. The minimum dimensions of the car park lots and layout including access to the car park lots shall meet the requirements as specified in Chapter 2 of the Code of Practice for Vehicle Parking Provisions (2019) in development proposals.



- 5.8.2 There shall be a sign indicating that the covered carpark is "Parking Area for LTA staff". All lots shall be marked and provided with concrete wheel stoppers and signage. The wheel stoppers and signage shall be maintained for the duration of the Contract.
- 5.8.3 The car park lots and space shall be illuminated and weather-proof switches and LED light fittings shall be provided with a minimum lighting level of 50 lux. The pillars of parking lots shall be marked with reflective tape to ensure visibility during parking at all times.
- 5.8.4 The car park compound for LTA staff shall be separated from the Contractor's car park compound. The Contractor shall note that the car park compound and driveways shall not be utilised for his safety briefing or toolbox talks.
- 5.8.5 The covered parking spaces shall be linked to the entrance of the Authority's Offices. The positions of the columns for the carpark shelter shall be arranged in a manner not to obstruct the opening of car doors.
- 5.9 **Green Building**
- 5.9.1 The Contractor shall design the Authority's Office to be a green building. The Contractor shall adopt various green building technologies and innovations (for example vertical green walls, recycling of surface drainage runoff for irrigation and solar panels etc.) to achieve better performance in areas such as energy efficiency, water efficiency, indoor environment quality and environmental management.
- 5.9.2 The Contractor shall consider appropriate building envelope and features such as greenery systems and sun shading devices and/or appropriate façade material for thermal comfort and to minimize solar heat gain in the internal environment.
- 5.9.3 The Contractor shall consider the use of energy efficient air-conditioning system, high efficiency lighting including motion sensors, etc., as part of the effort to reduce energy consumption. The Contractor shall incorporate the use of energy efficient light fittings with energy efficient lamps to reduce the lighting load. Where motion sensors are used, it shall be properly selected, positioned and tested so as to be able to detect the range of motion in the entire space to avoid switching off of lights when the space is occupied with little activity.
- 5.9.4 The Contractor shall as far as practicable incorporate the use of day lighting, natural ventilation and greenery in his design (e.g. landscaping, green roof, etc.).
- 5.9.5 The Contractor shall demonstrate to the Engineer that the design of the Authority's Offices is able to reduce the impact on the environment.

**5.10 Architectural Model**

5.10.1 A Project Information Centre (PIC) will be set up by the CR209 Contractor. The purpose of the PIC is to provide information on the project to the general public and interested parties, and as a base for conducting public relation efforts e.g. briefings by the Contractor.

5.10.2 The Contractor is required to provide architectural/artist perspective of the station for display at PIC.

**5.10.3 Architectural Model requirement**

- a) The Contractor shall engage an approved architectural model maker to make one (1) architectural model;
- b) The architectural model of the CR206 Station, including above ground structures like commuter facilities, bus shelters, covered linkways, landscaping, adjacent roads, parks/forest, building and structures, and underground structures, connection to Entrances with cutaway section showing the interior of the station levels to foundation level, at a scale of 1:200 with plan dimensions of minimum 1.5m by 0.9m, with lighting and protective cover and be placed on a stable support;
- c) The model shall be based on the BIM models/Drawings developed by the Contractor. The model shall be delivered to the PIC within six (6) months of award of Contract or as directed by the Engineer;
- d) The Contractor shall note that throughout the Contract period, he shall modify the initial model to account for any major changes to the design as and when directed by the Engineer. The Contractor shall rectify any damage to the model and maintain the model;
- e) The model shall be made of plastic, timber, plywood, corksheets, balsawood, perspex and other approved materials. The model shall include buildings, trackwork, human figures, cars, trees, footpaths, roads, contours, driveways, fences and other items shown in the Drawings;
- f) The Contractor shall provide a 6mm thick perspex covering with corner reinforcements, supply the model on a solid timber base of not less than 50mm thickness, and supply robust display stand(s) to support the model;
- g) The colour schemes for the model shall be submitted to the Engineer for acceptance;

- h) A proportionate title block made of 1mm thick perspex shall be placed at the lower right or left hand corner of the model. The title block shall include an approved title with wordings to the Engineer's acceptance; and
- i) The Engineer shall be entitled to inspect the construction of the model at various stages and request necessary modifications to them.

5.10.4 The Contractor is also required to provide the followings information/material to the PIC:

- a) Representative soil samples over the depth and length of station construction to be placed in transparent PVC tube. (size of tube to be coordinated with the CR209 Contractor);
- b) Six (6) nos of A3 size colour monthly progress photos and charts in appropriate form and size coordinated with the CR209 Contractor;
- c) A2 size colour posters on construction methodology and sequence in appropriate form and size coordinated with the CR209 Contractor;
- d) Sufficient copies of PR newsletters/leaflets to be made available at all times as determined by the Engineer;
- e) Two (2) nos of A3 size framed aerial photos of site in appropriate form and size coordinated with the CR209 Contractor; and
- f) Animation videos of the construction sequences of station.

5.10.5 The Contractor shall update the information and material provided to the PIC on a monthly basis.

5.10.6 The Contractor is required to liaise with the PIC Contractor's PRO on a monthly basis on PR activities and briefings to be held at the PIC.

5.10.7 The Contractor shall allow in his cost for shifting of models for public events organised for ground breaking ceremony or events held at public places.

5.10.8 During the construction period, the model may be temporarily shifted to public events for display. The Contractor shall bear transportation cost and labour in moving the model from time to time.

## 5.11 **Removal of Authority's Offices**

5.11.1 Within three (3) months from the date of Substantial Completion of the whole of the Works, the Contractor shall commence and complete demolition of the Authority's Offices and all its facilities, including the

termination of all utility services. The Contractor shall also dispose of equipment, furniture, etc. if required by the Engineer. The Contractor shall be responsible to remove all foundations, hard standing and fencing/hoarding, reconstruct any drains as necessary and turf the area. The Contractor shall maintain this area and the affected services during the Defects Liability Period and make all necessary arrangements for handing over to the relevant authorities and land owners.

**Table 5.1 – Furniture for 12m<sup>2</sup> Office Room Type 1**

<b>Item</b>	<b>Size/Type(Minimum)</b>	<b>Qty Per Room</b>
L-Shape Work Desk	4200mm x 800mm x 720mm	1
Desk	1500mm x 700mm x 720mm	1
Chairs	Adjustable height, swivel, with arms, high back and reclining feature	1
	Swivel, medium back, adjustable height, without arms	2
Pedestal	Compatible with desks, i.e. to fit under. Each set containing 3 drawers and size 400mm(w) x 600mm(d) x 650mm(h).	1
White Board inclusive of white board markers of 4 different colours and white board duster	1200mm x 900mm	1
Notice Board	1200mm x 900mm	1
Steel Filing Cabinet (shelves)	900mm(w) x 450mm(d) x 850mm(h) and lockable.	2
Steel Filing Cabinets (drawers)	4 drawers	1
In/out/KIV tray		1
Waste paper bin		1
Power points	Twin 13-Amp Switch Sockets	2
Coat hooks	Set consisting of 2 hooks	1

**Table 5.2 – Furniture for 1400mm high Workstation**

<b>Item</b>	<b>Size/Type(Minimum)</b>	<b>Qty Per Workstation</b>
L-Shape Work Desk	4200mm x 700mm x 720mm	1
Desk	1200mm x 700mm x 720mm	1
Chairs	Adjustable height, swivel, with arms, medium back and reclining feature.	1
Pedestal	Compatible with desks, i.e. to fit under. Each set containing 3 drawers and size 400mm(w) x 600mm(d) x 650mm(h).	1
Laminated timber Filing Cabinet (with shelves)	900mm(w) x 450mm(d) x 1250mm(h) and lockable.	1
In/out/KIV tray		1
Waste paper bin		1
Power points	Twin 13-Amp Switch Sockets	2

**Table 5.3 – Furniture for 50m<sup>2</sup> Conference Room (for each room)**

<b>Item</b>	<b>Size/Type</b>	<b>Qty Per Room</b>
Table	To accommodate 30 persons, minimally 1500mm (w) With built-in provision of the following: <ul style="list-style-type: none"> <li>• 6 nos. of twin socket 13A electric supply of 230V</li> <li>• 4 nos. of computer network points</li> <li>• 3 nos. HDMI input for ceiling mounted LCD projector with switch panel to allow switching among displays</li> </ul>	1
Chairs	Swivel, medium back, adjustable height, with arms.	30
Additional Chairs	Swivel, adjustable height, without arms.	20
Foldable chairs	With back rest	10
Wall clock (batteries included)	Not less than 250mm diameter	1
Glass Surface Board inclusive of white board markers of 4 different colours and white board duster	3000mm x 1200mm	2
Notice Board	3000mm x 1200mm	1
Cabinet with shelves, swing doors with lock	450mm deep x 1000mm long x 1000mm mm high	1
Steel Filing Cabinets (shelves)	1800mm(h) x 900mm(w) x 350mm(d) lockable	1
Refreshment Trays/Racks		1
Hot/ Cold Water Dispenser	Including bottled distilled drinking water (5 gallons/18.9 litres) and paper disposable cups	1
Waste paper bin	Capacity 5 litres	1
LCD Projector and Screen (with retractable screen and switches)	Minimum <ul style="list-style-type: none"> <li>• Resolution (Wide UXGA 1920x1200)</li> <li>• Contrast ratio (minimum 2500:1)</li> </ul>	1

Item	Size/Type	Qty Per Room
	<ul style="list-style-type: none"> <li>• Supports HDMI, VGA, USB and Display Port connections</li> <li>• Image technology (DLP/LCD technology)</li> <li>• Supports audio playback</li> <li>• Brightness. (minimum 5000 ANSI Lumen)</li> </ul> <p>Screen size (minimum 2m width by 2.5m height)</p> <p>To include warranty, service maintenance and to provide replacement of damage items and wear and tear parts including bulbs replacement.</p>	
Power points	Twin 13-Amp Switch Sockets	2
Telephone Point and Telephone Set	2 lines as part of the telephone system	2
HDMI Connection	The HDMI connections shall be established with Remote Monitoring Centre to receive live video feeds from the Video Management System and connect to the mobile interactive digital LED touchscreen when necessary. (For Project Office Only)	1
Speakerphone	<ul style="list-style-type: none"> <li>• Full-duplex speech performance</li> <li>• Acoustic echo cancellation</li> <li>• Noise reduction/cancellation</li> <li>• Ultra-wideband audio</li> <li>• Pairs with mobile devices via Bluetooth and NFC, etc</li> <li>• Buttons for call answer/end, volume up/down/mute etc.</li> <li>• Ports suitable for plug and play</li> <li>• Necessary cables to connect all components</li> </ul>	1



Item	Size/Type	Qty Per Room
	<ul style="list-style-type: none"> <li>To ensure that it is compatible with common conferencing platforms including but not limited to, Skype for business, MS-Teams, Zoom.</li> </ul>	
75-inch TV		1
55-inch TV		1

**Table 5.4 – Furniture for 25m<sup>2</sup> Meeting Room (for each room)**

Item	Size/ Type	Qty Per Room
Table	To accommodate 16 persons With built-in provision of the following: <ul style="list-style-type: none"> <li>2 nos. of twin socket 13A electric supply of 230V</li> <li>2 nos. HDMI input for ceiling mounted LCD projector with switch panel to allow switching among displays</li> </ul>	1
Chairs	Swivel, medium back, adjustable height, without arms.	20
Foldable Chairs	With back rest	10
Glass Surface Board inclusive of white board markers of 4 different colours and white board duster	3000mm x 1200mm	1
Notice Board	3000mm x 1200mm	1
Cabinet with shelves, swing doors with lock.	450mm deep x 1000mm long x 1000mm mm high	1
Hot/ Cold Water Dispenser	Including bottled distilled drinking water (5 gallons/18.9 litres) and paper disposable cups	1
Wall clock (batteries included)	Not less than 250mm diameter	1
Waste paper bin	Capacity 5 litres	1
LCD Projector and Screen	<ul style="list-style-type: none"> <li>Resolution (Wide UXGA 1920x1200)</li> </ul>	1

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	<ul style="list-style-type: none"> <li>• Contrast ratio (minimum 2500:1)</li> <li>• Supports HDMI, VGA, USB and Display Port connections</li> </ul>	
Power points	Twin 13-Amp Switch Sockets	2

**Table 5.5 – Pantry (for each pantry)**

<b>Item</b>	<b>Size/ Type</b>	<b>Qty Per Pantry</b>
Dining Table & Chairs	6-seater dining table with 6 dining chairs	1 set
Rubbish Bin	Capacity 50 litres	1
Kettle/Boiler	Capacity 3 litres	1
Air pot		1
Fridge	Capacity 500 litres	1
Hot and Cold Water Dispenser	Direct supply from tap. Filter to be maintained and replaced regularly.	1
Hot and Cold Water Dispenser	Including bottled distilled drinking water (5 gallons/18.9 litres) and paper disposable cups	1
Microwave Oven	1000W	2
Sink Unit with Double Drainer and Tap with Water Supply		1
Work Surface	3000mm x 600mm	1
Cupboard(s)	600mm(w) x 600mm(d) x 1500mm(h)	4
Drawers	600mm(w) x 600mm(d) x 150mm(h)	2
Mugs		12
Crockery	Small plate, large plate, dish	12 each
Cutlery	Teaspoon, knife, fork, spoon	12 each
Tray		3
13A Electric Sockets (Double)		4
Electrical Wall Fan		1

**Table 5.6 – Male Toilet and Changing Room (for each floor)**

<b>Item</b>	<b>Size/Type</b>	<b>Project Office</b>
Wash Basins	Complete with thimble installation for all water taps	3
Toilet Cubicles	Complete with bib tap and flexible hose and with accessories e.g. coat hook, jumbo toilet paper dispenser.	3
WC (Sitting Type)		3
Urinals	Manual flush, privacy screen	3
Shower Cubicle	Complete with accessories e.g. coat hook, towel racks, soap holders, shower caddy, Water Heater of minimum 3.5kW	2
Air Freshener		1
Soap Dispensers		2
Mirrors	Wall hung mirrors with dimensions no less 500mm (h) x 500mm (w)	3
Mirrors	Wall hung full height mirror with dimensions no less than 1800mm (h) x 600mm (w)	1
Electrical Hand Dryer		1
Electrical Wall Fan		1
Waste Paper Bin		1
Toilet Consumables	Shower soap, toilet papers, paper towels, air fresheners and hand soap	As required
Disposable Paper Hand Towel with Dispenser	With supply of paper towels	1
Long Bench	With clothes racks	1
Electrical Hair Dryer		1

**Table 5.7 – Female Toilet and Changing Room (for each floor)**

<b>Item</b>	<b>Size / Type</b>	<b>Project Office</b>
Wash Basins	Complete with thimble installation for all water taps	3
Toilets Cubicles	Complete with bib tap and flexible hose and with accessories e.g. coat hook, jumbo toilet paper dispenser.	3
WC (Sitting Type)		3
Sanitary Napkin Disposal Units		3
Shower Cubicles	Complete with accessories e.g. coat hook, towel racks, soap holders, shower caddy, water heater of minimum 3.5kW	1
Air Freshener		1
Soap Dispensers		2
Mirrors (Toilet)	Wall hung mirrors with dimensions no less 500mm (h) x 500mm (w)	3
Mirrors	Wall hung full height mirror with dimensions no less than 1800mm (h) x 600mm (w)	1
Electrical Hand Dryer		1
Electrical Wall Fan		1
Waste Paper Bin		1
Toilet Consumables	Shower soap, toilet papers, paper towels, air fresheners and hand soap	As required
Disposable Paper Hand Towel with Dispenser	With supply of paper towels	1
Long Bench	With clothes racks	1
Electrical Hair Dryer		1

**Table 5.8 – Carpark**

Item	Project Office
Covered Carpark Lots	15
Covered Motorcycle Lots	5

**Table 5.9 – Reception Area**

Item	Size/ Type	Qty
L-Shape Work Desk	4500mm x 750mm x 720mm	1
Chair	Adjustable height, swivel, with arms.	1
Pedestal	Compatible with desks, i.e. to fit under. Each set containing 3 drawers and size 400mm(w) x 600mm(d) x 650mm(h).	1
Steel Filing Cabinet (shelves)	900mm(w) x 450mm(d) x 1600mm(h) and lockable	1
Notice Board	3000mm x 1200mm	1
Medium softness, fabric, 2-Seater Chair		2
Wall clock (batteries included)	Not less than 250mm diameter	1
Waste paper bin		1
Power points	Twin 13-Amp Switch Sockets	2
AED		1

**Table 5.10 – Drawing/Document/Filing Room**

<b>Item</b>	<b>Size/ Type</b>	<b>Qty Per Room</b>
Work Desk	1500mm x 700mm x 720mm with drawers	1
Chair	Adjustable height, swivel, no arms	2
Steel Filing Cabinet (shelves)	900mm(w) x 450mm(d) x 1850mm(h) and lockable	9
Heavy Duty Steel Storage Rack	1200mm(w) x 400mm(d) x1600mm(h)	4
Waste paper bin		1
Power point	Twin 13-Amp Switch Sockets	1

**Table 5.11 – Computer Distribution Room**

<b>Item</b>	<b>Size/Type</b>	<b>Qty Per Room</b>
Work Desk	1000mm x 700mm x720mm with drawers	1
Chairs	Adjustable height, swivel, no arms	1
Power points	Twin 13-Amp Switch Sockets	4
Dedicated DBs shall be provided per computer server room. All Switch Socket Outlet to be on dedicated circuit provided with individual RCCBs.		

**Table 5.12 – Other Requirements for Authority’s Offices**

<b>Item</b>	<b>Size/ Type</b>	<b>Project Office</b>
Steel Open Shelves (tall)	2000mm (h) x 900mm (w) x 400mm(d)	15
Drawing Rack with Hangers	Suitable for A0 drawings with 25 hangers on each rack.	25
Pigeon Hole Racks	Contractor to propose the size subject to the acceptance of the Engineer	1
Photocopier	Colour, multi-function, auto feed facility with duplex, sorter, hole puncher and stapling capabilities, A3/A4 reducing/ enlarging facility, collate min. 20 copies. 20,000 copies / month, FAX (standard paper type) capability with auto feed, auto memory and time stamping. A3 Colour scanning and printing capabilities with network connectivity.	2
	Supply of Paper To supply A4 and A3 paper, 80g/m <sup>2</sup> as and when requested by the Engineer.	As required
Laminating Machine	Up to A3 size, including refills supply as and when requested by the Engineer.	1
Paper/ Document/CD Shredder	Minimum cross cut shredding 250 sheets/minute	1
Ring Binding Machine	Electrical	1
Document Camera Projector	2200 ANSI Lumen (include warranty, service maintenance and to provide replacement of damage items and wear and tear parts including bulbs replacement)	1
Portable Projector	3600 ANSI Lumen (include warranty, service maintenance and to provide replacement of damage items and wear and tear parts including bulbs replacement)	1
Laptop	Common notebooks with minimally 15.6-inch (15.6”) LED monitors	1



Item	Size/ Type	Project Office
Laser Pointer		4
Portable 2.5 inch Hard Disk	Minimum 2 TB capacity with USB 3.0 port.	2
Two step stool for document retrieval		1
Heavy Duty Stapler		2
Heavy Duty Hole Puncher		2
First Aid Kit	Adequate for 35 persons including regular replenishment for each storey	1
Heavy Duty Outdoor Floor Mat	1000mm x 600mm	8
Shoe Rack (for safety boots)	Adequate for site use	3

**Table 5.13 – Portable Office (For each office, unless otherwise stated)**

<b>Item</b>	<b>Size / Type</b>	<b>Qty</b>
Desks	1200mm(w) x 700mm(d) x 700mm(h)	2
Chairs	Swivel, adjustable height	4
Opening Shelves	2000mm (h) x 1600mm (w) x 500mm (d)	1
Steel Filing Cabinet	1800mm (h) x 350mm (w) x 900mm (d)	2
Pedestal	400mm wide, to fit under desk	2
Fridge	Capacity 300 litres	1
Hot and Cold Water Dispenser	Including bottled water supply, disposable cups and sufficient storage space for the bottled water.	1
Electrical Socket	Double switched sockets, 230V	4
Electrical Kettle	1 litre capacity, auto switch off	1
Microwave Oven	800W	1
Drawing Rack	Suitable for A0 drawings with 20 hangers per rack	2
Boot Cleaner		1
Bristle Mat	Heavy Duty, 600mm x 400mm	1
Fire Extinguisher		1
First Aid Kit	Adequate for 4 persons and replenished regularly	1
Telephone Line	1 telephone point including telephone set (1 line as part of the system)	1
Internet connection	At least 100 Mbps with wi-fi capacity	
Waste Paper Bin	5 litres	1

**Table 5.14 – QP(S)'s Office**

<b>Item</b>	<b>Size / Type</b>	<b>Qty</b>
L-shaped Work Desk	4200mm x 800mm x 720mm	4
Desk	1500mm x 700mm x 720mm	18
Chairs	Adjustable height, swivel, arms, medium back, recline	4
	Adjustable height, swivel, arms	18
	Adjustable height, swivel, no arms	4
Pedestal	Compatible with desks, i.e. to fit under desk with each set containing 3 drawers 650mm(h) x 450mm(w) x 650mm(d)	18
Steel Filing Cabinets (shelves)	1800mm(h) x 900mm(w) x 350mm(d) lockable	18
First Aid Kit	Adequate for 24 persons including regular replenishment	1
Waste Paper Bins	5 litres	22

**Table 5.15 – IM Specialist Contractor's Office**

<b>Item</b>	<b>Size / Type</b>	<b>Qty</b>
L-shaped Work Desk	4200mm x 700mm x 720mm	3
Small Desk	1200mm x 700mm x 720mm	3
Chairs	Adjustable height, swivel, no arms	3
Pedestal	Compatible with desks, i.e. to fit under desk with each set containing 3 drawers 650mm(h) x 450mm(w) x 650mm(d)	3
Steel Filing Cabinets (shelves)	1800mm(h) x 900mm(w) x 350mm(d) lockable	3
Waste Paper Bins	5 litres	3

**Table 5.16 – Remote Monitoring System Control Centre**

<b>Item</b>	<b>Size / Type</b>	<b>Qty</b>
Work Desk	1500mm x 700mm x 720mm with drawers	2
Chairs	Adjustable height, swivel, no arms	2
Power points	Twin 13-Amp Switch Sockets	4
Telephone	1 telephone point including telephone set (1 line as part of the system)	1
Steel Filing Cabinets (shelves)	1800mm(h) x 900mm(w) x 350mm(d) lockable	1
Waste Paper Bins	5 litres	2
Windows-based desktop Personal Computers (PC)	Include 24" monitor, wireless mouse, keyboard, lock, bag, MS Office Professional, anti-virus software with warranty and maintenance (Refer to <b>Clause 17</b> of the Particular Specification on the detailed PC requirements)	2
55" HD TV Screen	Including all necessary accessories	2
Network point		6
85" FHD TV Screen	Including all necessary accessories	1