

**SUPPLY & INSTALLATION
of the
SECURITY SERVICES
for the
LTA KARAVI WEIGHBRIDGE STATION
at
KARAVI, BA, FIJI ISLANDS**

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**SECURITY SERVICES
LAND TRANSPORT AUTHORITY KARAVI WEIGHBRIDGE STATION,
KARAVI, BA, FIJI ISLANDS**

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SECTION 1 GENERAL CONDITIONS OF CONTRACT

General Conditions of Contract shall be the Conditions of Contract for Land Transport Authority Karavi Weighbridge Station, Karavi, Ba and any other Amendments and Revisions up to date of issue, provided by the Principal Consultant.

SECTION 2 SPECIAL CONDITIONS OF CONTRACT

Special Conditions of Contract shall be the Conditions of Contract for Land Transport Authority Karavi Weighbridge Station, Karavi, Ba and any other Amendments and Revisions up to date of issue, provided by the Principal Consultant.

SECTION 3 PRELIMINARY AND GENERAL

Conditions of Contract shall be the Conditions of Contract for Land Transport Authority Karavi Weighbridge Station, Karavi, Ba and any other Amendments and Revisions up to date of issue, provided by the Principal Consultant.

SECTION 4 GENERAL

4.1 Introduction

This specification details the requirements for the supply, installation, testing and commissioning of the Land Transport Authority Karavi Weighbridge Station, Karavi, Ba.

This Specification is to be read in conjunction with all relevant and associated reference documents and drawings that are part of this project.

A full set of Architectural documents can be viewed in the offices of the Engineer.

4.2 Tender submittal

The tender for the supply and installation of the services shall be marked and addressed as the following:

As per advice by the Project Manager.

4.3 Definitions & Abbreviations

The following definitions and abbreviations are applicable to this project:

TERMS	DEFINITION
"Project"	LAND TRANSPORT AUTHORITY KARAVI WEIGHBRIDGE STATION, KARAVI, BA.
"Client", "Owner", "Employer"	LAND TRANSPORT AUTHORITY OF FIJI
"Architect"	CONWAY ARCHITECTS
"Structural Engineer"	-
"Quantity Surveyor"	-
"Services Engineer"	IRWIN ALSOP PACIFIC LIMITED
"Tenderer", "Sub -contractor".	The company bidding for and subsequently being accepted to carry out the works outlined in this Specification.
"Contract", "Sub-Contract"	The works included in this Specification and the accompanying engineering drawings.
"Approved"	Subject to the inspection, investigation and written approval of the Services Engineer before being implemented into the Contract works.
"Indicated"	As shown on the Contract drawings and specifications, and by notes, figures, sketches or writing, thereon or by any combination thereof.
"Supply & install"	Whether or not the words "supply and install" appear in this Specification or on the drawings, unless clearly excluded, all items of equipment for the complete installation are required shall be supplied and installed.
"Equivalent"	Any system/equipment meeting or exceeding the stated standard and regulatory authority requirements.

4.4 Local Authority Requirements

The work carried out by the Security Services Sub-Contractor shall comply in all respects with this Specification and;

- a) Energy Fiji Ltd regulations,
- b) Telecom Fiji Ltd regulations,
- c) National Fire Authority regulations,
- d) The Health and Safety at Work Act; and
- e) The Building Regulations applicable to the project

The Security Services Sub-Contractor shall be responsible for liaison and making applications to relevant local Authorities for permits to carry out the work involved, and pay all associated fees and charges in respect of the work involved as required by governing authorities.

Certificates shall be obtained from the appropriate Authorities indicating satisfactory completion of services and handed over to the Engineer before application for final payment. Variations to the installation found necessary to obtain approval shall be brought to the notice of the Engineer immediately. It is the responsibility of the Security Services Sub-Contractor to arrange for all necessary inspections and rectify any defects and deficiencies arising within the installation, to the full satisfaction of the above mentioned Authorities and the Engineer.

4.5 Adopted Standards & codes of practice

The work carried out by the Security Services Sub-Contractor shall comply in all respects with this Specification and the following Standards;

- a. National Building Code of Fiji
- b. AS/NZS 3000 – Australia/New Zealand Electrical Wiring Rules
- c. AS 4806.2 – Closed Circuit Television (CCTV) Application Guidelines
- d. AS/NZS 3084 - Telecommunications installations – Telecommunications pathways and spaces for commercial buildings.

Standards and Codes shall be recent issues, including the latest amendments and revisions, to be used during the supply and execution of the works.

Alternative comparable Standards and Codes which can be demonstrated to be equivalent or exceeding requirements of stated standard, shall only be considered as alternatives upon approvals sought from the Services Engineer and the Project Manager

Generally, the Sub-Contractor shall ensure implementation of such quality system which conforms to the requirements of AS3901 and ISO 9001 series of quality related Standards. Unless otherwise stated, the equipment and installation Standards shall conform in every manner to the requirements of the latest issue of appropriate and approved Australian and New Zealand Standards.

4.6 Association with other trades

The Sub-Contractor shall coordinate, as applicable, all works by other trades, including all interfaces to make the systems fully functional and operate as specified.

This shall include, but not be limited to: Architectural works, Landscaping works, Structural works, Electrical services, Mechanical services, Fire Protection Systems, Audio/Visual systems, Communications services, Lift services and Hydraulics/Water services.

The Sub Contractor shall at all times liaise with other Sub- Contractors and Engineer to ensure that the works are carried out in a timely, orderly manner so as to minimise risks, delays, disturbances, and damage to any equipment or property. Any inconsistencies between various trades and associated drawings shall immediately be reported to the Engineer.

4.7 Occupational, Health & Safety

The Sub - Contractor shall ensure that proper safety is maintained on site at all times during the course of the project as per *The Health and Safety at Work Act* and the requirements of the Labour Department.

The Sub-Contractor's personnel shall be in proper safety gear and equipment including, but not limited to, hard hats, safety boots, safety gloves, safety goggles, ear muffs/plugs, dust masks, proper harness, etc.

The site personnel are to ensure that proper and safe handling of all equipment is maintained at all times, to avoid injury/danger to one's self and to others.

SECTION 5 SCOPE OF WORKS

5.1 Extent of works

The scope of works comprises the supply, installation, testing, commissioning, maintenance and defects liability services for the Land Transport Authority Karavi Weighbridge Station, Karavi, Ba.

This shall include all necessary work required to implement the intent and meaning of this specification and associated drawings.

Whether or not the words “ supply and installation” appear in this specification or on the drawings, unless clearly excluded, all item of equipment for the complete installation are required and shall be supplied and installed.

Extent of Works:

The works shall include but will not be limited to the following items:

- a) Supply and installation of Network Video Recording system and associated accessories.
- b) Supply and installation of the CCTV cameras and associated cabling.
- c) Supply and installation of the Monitoring Screen and associated accessories.
- d) Supply and installation of the Biometric Access Control system and associated cabling.
- e) Supply and installation of cable ducts, conduits and cabling support systems.
- f) Conduct final system configuration, testing and commissioning.

Additional Requirements

The following additional services shall be provided:

- a) Co-ordinate with the Main Contractor and other Contractors working on the project.
- b) Shop Drawings
- c) As Installed Drawings
- d) Installation Manuals
- e) Testing, Commissioning, warranty and preventative maintenance of the complete Security Services.

5.2 Drawings

SECURITY SERVICES

DWG NO.	DESCRIPTION	SCALE
S01	SCHEDULE OF DRAWINGS / LEGEND / ABBREVIATIONS / SPECIFICATION / LOCALITY PLAN	NTS
S02	PROPOSED SITE PLAN – CCTV CAMERA LAYOUTS	1:250 @ A3
S03	PROPOSED GROUND FLOOR PLAN – CCTV CAMERA & ACCESS CONTROL LAYOUTS	1:100 @ A3
S04	PROPOSED SECURITY SCHEMATICS & DETAILS	NTS

5.3 Works by other services

5.3.1 Architectural & Structural Works in association

The Building Main Contractor shall provide cut-out / penetrations exceeding 100mm in diameter and/or 100mm x 100mm square along walls, partitioning, ceiling, roof, floors and wherever required upon approvals sought from the Engineer.

Penetrations which are lesser than the stated dimensions above shall only be made by the Sub-Contractor upon proper permission/approvals being sought from the Main Contractor.

These penetrations shall be sealed in an approved manner by the Security Services Sub-Contractor, upon completion of the required installation by the Sub-Contractor. Note that all penetrations shall be executed in a manner that maintains the fire rating, acoustic and security integrity of the walls, partitioning, ceiling, roof, floors, etc.

5.3.2 Electrical Works in association

The Electrical Sub-Contractor shall provide the following works:

- a. The power supply to the equipment rack.

The cable tray for cable reticulation of the Security Services. The length of run for the cable trays shall take into consideration such factors as bending requirements, support spacing, joining methods, and as indicated on the drawings, by the Electrical Sub-Contractor. These shall be of 300mm and/or 600mm wide, and of length as indicated on the services drawings.

5.4 Shop drawings & samples

Supply shop drawings in SI Metric to completely detail the works as follows:

ITEM	INFORMATION REQUIRED	SETS
Equipment layouts	Layouts	3
Connections	Diagrams	3
Conduit routes	Conduit routes	3

Submission to the Principal Consultant in the first instance shall be made not less than one week prior to approval in principle is required.

Examination by the Engineer shall not diminish the Security Services Sub- Contractor's responsibility for co-coordinating and checking shop drawings nor the Security Service Sub-Contractor's responsibility for correctness of his work.

The Security Services Sub-Contractor shall submit samples or brochures with technical data of the following items for approval prior to installation:

- Network Video Recorder
- Camera type
- All cable types to be used;
- Equipment rack (if any);
- Any necessary patch panel and switches (if any);

5.5 Work programme

Submission to the Principal Consultant in the first instance shall be made not less than one week, prior to approval in principle, is required. The work programme which shall match the main project programme outline shall be amended, as and when advised by the Project Manager.

SECTION 6 ACCESS CONTROL SYSTEMS

6.1 General

The Access Control system must incorporate an integral biometric template enrolment system. These biometric technologies include, but may not be limited to:-

- Card and Finger print recognition
- Card and finger vein recognition
- Photograph on swipe

6.2 General Requirements

Fingerprint biometric templates shall be distributed via the network to the Ethernet fingerprint readers. Biometric templates will be distributed using the same network as that used for the access control data to each reader. A separate network for the biometric system will not be acceptable.

Each Ethernet card & fingerprint reader shall be able to store up to 123,000 biometric templates in its on-board database, and have the ability to store up to 8,000 offline transactions.

The Ethernet card & fingerprint reader shall be a fully integrated device, housing the fingerprint scanning module, LCD display, keypad, and all associated connections in a single compact enclosure.

6.2.1 Card enrolment with Fingerprint

- a) Biometric templates and enrolment shall be integral the system avoiding the requirement to enrol on two systems. Standalone software for the biometric system will not be acceptable.
- b) Encoded Fingerprint template enrolment onto the access control system shall be via Ethernet, and be secured with at least RC4 encryption.
- c) The system must include an integral method to create two separate encoded templates generated by a card holder's fingerprint for each card holder in the system.
- d) In the event a card is lost or damaged, the card holder shall not need to return to the enrolment station to have a new card issued.

SECTION 7 CLOSED CIRCUIT TELEVISION (CCTV) SURVEILLANCE SYSTEMS

7.1 CCTV Surveillance

7.1.1 Standards

The CCTV system shall comply with the following Australian Standards:

- a. AS 4806.2: Closed Circuit Television (CCTV) Part 2: Application Guidelines
- b. AS 3000: [Electrical] Wiring Rules

7.1.2 Glossary of Terms

The following terms are used in this document.

Term	Definition
CIF	Common Intermediate Format (of picture resolution) equating to an image occupying a full standard television screen 352 x 288 pixels
2CIF	2 xCommon Intermediate Format (of picture resolution) equating to an image occupying a full standard television screen 407 x 288 pixels
4CIF	4 xCommon Intermediate Format (of picture resolution) equating to an image occupying a full standard television screen 704 x 576 pixels
ACMA	Australian Communications and Media Authority (formerly Austel, then Australian Communications Authority)
CCTV	Closed circuit television
DVR	Digital video recorder (with analogue video input interface)
DVD	Digital video disk
fps	Frames per second
GB	Giga bytes (1 000 000 000 Bytes of data)
GbE	Gigabit Ethernet
IGMP	Internet Group Management Protocol
IP	Internet protocol
KVM	Keyboard-Video-Mouse (switch)
LAN	(Computer) local area network
LIU	Line Isolation Unit
Mbps	Megabits per second
MB	Million Bytes
MIB	Management information base
MMOF	Multimode optical fibre
MPEG	Moving Picture Experts Group (standardisation body)
NTP	Network Time Protocol
NMS	Network Management System
NVMS	Network Video Management System
NVR	Networked video recorder (Internet protocol input and output)
PAL	Phase Alternating Line (television standard adopted in Australia, UK and most western European countries). Frames comprising a total of 625 lines (not all visible) are transmitted at 25 frames per second.
PDF	(Adobe) Portable Document Format
PIM	Protocol Independent Multicast
PoE	Power over Ethernet standard (IEEE 802.3 af)

Term	Definition
PTZ	Pan Tilt Zoom
QoS	Quality of service
RU	Rack Units conforming to dimensions standardised in IEC 60297. 1RU = 44.45 mm.
SMOF	Single mode optical fibre
SNMP	Simple Network Management Protocol
TB	TeraBytes (1 000 000 000 000 Bytes) = 1000 GB
Tx/Rx	Transmitter/Receiver

7.1.3 Preferred System

The preferred CCTV system shall be based around the **Axis** range of CCTV equipment or approved equivalent. Any proposed alternative systems shall be demonstrated by the Security Sub-Contractor to meet, as a minimum, the performance and interface requirements of the above system.

7.1.3.1 Cabling Installation

- (a) All cables shall be single continuous runs over the entire route between specified termination points. Support and installation shall comply with AS3084 including compliance with clauses in “Informative” sections unless otherwise approved by the Engineer.
- (b) All duct entries and exits shall be sealed using approved glands.
- (c) All local power cabling and distribution shall comply with AS/NZS 3000 and segregation from extra low voltage circuits shall comply with AS/NZS 3000.
- (d) All cables shall be identified within 100 mm of both ends with a machine printed indelible wrap on or sleeve cable identification code which shall be cross referenced to schematics, cable schedules and jumper records.
- (e) All metallic enclosures shall be bonded to the earth bonding system, to AS/ACIF S009.

7.1.3.2 Power Supply

All CCTV equipment shall be connected to the dedicated CCTV UPS, as indicated on the drawings. All field cameras shall be cabled back to rack mounted power supplies. Individual power packs for each camera shall not be used.

7.1.4 Site Installation Planning

The site installation planning shall identify all issues related to running and fixing cabling and equipment for approval prior to the commencement of construction. Site installation planning shall include the following:

- (a) Select the most aesthetic but practical camera mounting system and obtain the Client’s approval of the mounting system prior to proceeding with this. Where cameras in dome enclosures are to be provided, mounting details shall be carefully considered taking into account the exposed structure, the requirement to conceal cabling and the security and maintenance of the cameras.
- (b) Ducting or conduit runs to equipment shall be concealed from view unless otherwise approved.
- (c) Record the site camera location, cable route and pathway information on the As Installed drawings to be provided as part of the overall works.

7.1.5 CCTV Camera Installation

7.1.5.1 General requirements

CCTV camera views shall cover the whole of the areas indicated on the drawings. The positioning, orientation and lens selection for the CCTV cameras shall be entirely suited to the locations shown and mounting arrangements required. Cameras shall be mounted with purpose made brackets to suit the mounting configuration on the building structure and fascia. The locations selected appear the most appropriate position for the coverage of the area required. However, prior to finally locating any camera, the position shall be tested with a camera and various lenses to ensure this is the optimum location. To mitigate against possible camera theft or tampering, it is preferred all fixed cameras are located within the field of view of another fixed camera. Cameras shall be positioned to avoid backlight and pointing into the sun at particular times of the day, and times of year, especially early morning and later afternoon. The lens size for

each camera shall be determined from a site inspection, which will determine the distance and angle for viewing for each camera. A test camera and portable monitor shall be provided by the Security Sub-Contractor for this purpose.

Cameras shall be mounted using tamper proof fasteners and enclosed in lockable housings. Housings shall be secure, vandal proof and installed so as to minimize their vulnerability to vandalism. External cameras shall be mounted within weatherproof enclosures. Cameras under canopies shall be mounted within surface mounted 'domes'. All external fixings, mounting brackets, bolts, nuts etc., shall either be hot dipped galvanized or stainless steel. Fixings for cameras on the poles shall be aesthetically designed to accord with the pole and light fitting design. All camera fixing and housing types shall be approved by the Engineer prior to installation.

The selection of camera will be dictated by operational requirements and higher performance or special cameras may be required in specific circumstances. The CCTV camera location, orientation and field of view shall comply with the field of view objectives as shown on the drawing. Fixtures that may obstruct or interfere with the desired views shall be allowed for. The numbering of cameras shall follow a logical sequence with a consistent pattern. Cameras shall be numbered in the general order of viewing priority whilst maintaining an orderly progression. Numbering on schedules is indicative only. Housings and mounting structures shall generally comply with AS4806.2 Clauses 3.8, 5.3 and 5.4. Tinted dome housings are preferred to render the camera coverage ambiguous to the casual observer. Housings shall:

- be compatible with the selected camera type, point direction and mechanical fit of lenses to achieve the required field of view.
- have optical properties which do not detract from the achievement of the specified resolution under day time or night time conditions.
- a body and viewing window of strength to mitigate vandalism damage, especially when installed at a height below 3.5 metres above finished ground or floor level.
- exhibit ingress protection rating suitable for keeping the camera dry and to prevent the build-up of [pantograph] dust on the camera lens and on the viewing window or dome inside the housing, especially on platforms and areas in the same air space as rail track.
- be installed in uncovered outdoor areas, be of a type which includes a visor to reduce the impairment of the camera image by sunlight and rain.

Lenses for fixed cameras shall be selected to achieve the field of view required for the respective camera duty and the Standards defining them (AS4806.2, especially clauses 3.6, 3.7 and 5.4.2). A varifocal lens shall be provided to allow the camera field of view to be adjusted to match the target shown on coverage diagrams or schedules. If possible by choice of lenses with appropriate optical properties, the site requirements shall be met by two standard lenses with overlapping focal length ranges such as 2.8 to >12 mm and <8 to 50 mm. The focal length ranges shall be chosen such that at least 80% of cameras will exhibit a resulting adjustment within the optimal image quality (resolution) range (and thereby not requiring adjustment to within the first or last 15% of lens focal length adjustment). Polarising filters may be required to reduce the effects of glare in outdoor areas which may have wet surfaces after rainfall. Cameras with high low-light sensitivity better than 0.1 lux (possibly switching to black and white mode under light levels below 0.8 lux) for night time coverage is required under moonlight conditions. Cameras having low light switching mode shall have the facility to:

- Automatically maintain sharp focus in each mode.
- Revert back to colour mode when the lighting level reverts above the threshold for a continuous period (programmable or pre-set to prevent hunting, typically 10 seconds).

7.1.5.2 Mounting Heights

The preferred mounting height of all externally mounted cameras is 3.5m – 4m above the finished ground level. Camera mounting heights are shown in the drawings provided with this specification.

7.1.5.3 Camera Specifications

Refer to the camera in the drawings for the preferred camera types. Alternative cameras shall meet or exceed the performance of the specified units.

7.1.6 Camera Field of View Objectives

The size of the subject in the final image shall be based on the Rotakin Target of 160cm high as follows:

OBSERVE	5% of screen height
DETECT	10% of screen height
RECOGNIZE	50% of screen height
IDENTIFY	120% of screen height

7.1.7 CCTV Recording & Playback

The CCTV recorder shall be a network based system, where management and configuration is performed using an intuitive web-based interface, which forms part of the CCTV control software. The data recording capacity shall be sized to allow for a minimum of 30 days storage in aggregate, where the average operational day should allow for:

- All cameras shall transmit at a rate of 12.5 fps, 4CIF resolution during all opening hours. Transmit rate to drop accordingly if no motion is detected.
- Alarm recording at 25 fps (at default resolution) for all cameras in the event of an emergency (intruder detected, access breach, duress alarm, etc.). Provide a link between the CCTV head end equipment and the security control panel, such that on activation of a security alarm all cameras shall record at maximum frame rate until such time as the alarm has been cleared.

When the recording system reaches capacity, it shall overwrite the stored images starting at the earliest chronological image. The digital recording system shall support variable frame rate recording in the range of 6 to 30 frames per second (fps) per video stream. The frame rate of each recorded video stream (camera) should be individually selectable within the specified range. The digital recording system shall support variable image resolutions of CIF, 2CIF and 4CIF. The image resolution of each recorded video stream (camera) should be individually selectable within the specified range. The recorded CCTV image stream encoding format shall be Moving Picture Experts Group type 4 (MPEG-4).

The encoding format for any recorded audio shall use synchronized MPEG-4 Audio layer 3 compressions. Both live and recorded images shall be accessible from each staff base position by authorized personnel, using the staff base CCTV PC fitted with appropriate viewing software. The CCTV PC users shall be able to access images by location, date/time, and camera and defined events such as duress alarm activation.

7.1.7.1 Image Authentication & Time Synchronisation

Recordings of CCTV data shall be securely encoded for authentication. Encoders shall encode the following data into the MPEG-4 stream meta-data for all streams:

- (a) Date;
- (b) Time, to the nearest second;
- (c) Camera identifier;
- (d) Location.

The CCTV system shall synchronize time to Co-ordinated Universal Time (UTC) with absolute accuracy of no greater than +/- 1000 milliseconds. The system shall use UTC for all time-based processing and time stamping. Leap-second corrections, gross errors and the correction of offsets following a system component restart shall be performed immediately.

7.1.8 Network Connection

The CCTV headend and recording equipment shall have integrated full-duplex redundant 10/100/1000Mbps Ethernet switches for direct connection to the LAN.

7.1.9 Documentation for Approval

7.1.9.1 Pre-Installation

Complete details of the proposed installation shall be submitted to the Engineer for approval before proceeding with procurement or execution. This shall include details of the proposed implementation, including the product make and model proposed for all items, technical data sheets and detail of any special manufacture.

7.1.9.2 Post Installation

Provide operation and maintenance manuals, including product brochures for all installed equipment, camera settings, supplier details, and support hotlines. Provide a full set of As-Installed drawings, indicating layout and labeling of installed equipment, cable types and routes, system schematics, etc. In addition to the information provided in the manuals, provide camera log sheet

SECTION 8 RETICULATION SYSTEMS

8.1 General

Cable trays shall be provided by the Electrical Sub-Contractor. The Security Services Sub-Contractor shall provide all conduits, underground conduits and catenary wires.

Materials and standards of workmanship shall fully comply with the relevant documents of the Standards Association of Australia, or, where no Australian Standard exists, the British Standard as published by the British Standards Institute including subsequent amendments applicable to any part or item forming part of the installation or with the best current practice.

All work shall comply with the Supply Authority Regulations, Health Commission Regulations, and Telecommunications Provider requirements.

All cabling, conduits, and ducting are shall be fully concealed. Where concealment of cables and conduit is not possible, written approval to proceed shall be required from the Project Manager prior to the commencement of this work.

The Security Services Sub-Contractor shall design all cabling networks such that voltage drops, video signal attenuation, cable separation, and ground loop parameters are designed in accordance with the relevant Standards and equipment manufacturer's recommendations.

All cabling shall be adequately shielded to prevent the introduction of spurious signals being generated onto or from adjacent cables/services. The Security Services Sub-Contractor shall ensure that shielded cable shall be used wherever spurious signals could affect the proper operation of the system or other services.

Open wiring shall only be permissible in enclosed, secure spaces under floor, in ceiling and wall cavities and on cable way(s).

8.2 Materials, Equipment and Workmanship

Only new materials, equipment, components and devices are to be used that are of current manufacture and first quality. The manufacturer must be approved where this has not been specified.

All cabling (in conduits) shall be installed in a vertical or horizontal direction.

Cables shall be installed 300mm clear of all electrical services.

11.2.1 Uniformity

When a particular manufacturer has been adopted for fittings, accessories or equipment, all such fittings, and their components shall be uniform throughout the project.

11.2.2 Positioning Of Equipment

The layout of equipment shown on the drawings is diagrammatic only, and exact locations shall be determined on site.

Equipment shall be symmetrically located in relation to other equipment and devices, the building module and general aesthetic treatment.

8.3 Electromagnetic Compatibility

All equipment and/or appliances provided shall be designed so that no interference will be caused with any radio or other electronic transmitting or receiving equipment in the same locality.

8.4 Labelling

The Security Services Sub- Contractor shall label comprehensively all cables, equipment, cabinets, and enclosures to clearly indicate their function.

All system cabling shall be identified using a cable marking system. Cable marking shall be permanent and indelible and indicate a cable number, a prefix relevant to the type of device at the destination of the cable and the equipment connection location the cable is connected to in the system.

Each cable shall be identified at each point of termination with the identification numbers clearly visible within fifty (50) mm of the termination.

The Security Services Sub-Contractor shall label all cables where cables enter or leave trays, racks, troughs or ducts according to the cable schedule or as directed with stamped aluminium or brass tags attached with nylon straps, typed Mylar film labels under clear 'heat shrink' or other approved means. The Sub-Contractor shall provide Velcro ties or nylon straps or ties to tie together single cables of the one circuit or system, to further assist maintenance identification.

All wiring terminating within cubicles, control panels, or equipment shall be clearly and permanently identified by means of indented letters or numbers.

The terminals or connections for each item of equipment on the control panels or equipment shall be clearly and permanently identified by means of stencilled letters or numbers.

Labels shall be affixed to identify each control panel or equipment, power supplies and other items as necessary.

All electronic security equipment and components shall be marked with Traffolyte labelling. Engraved Traffolyte lettering shall be at least 3.5 mm in height.

All cabling and equipment labelling information shall correspond and be cross-referenced to the "pre-installed" and "As-Installed" drawings, documentation, and schedules.

Each equipment cabinet, rack, and console shall contain a schedule of cable terminations, which shall indicate the purpose, point of origin and termination of each cable contained within the enclosure.

All equipment boxes, cabinets, racks shall contain a schematic diagram detailing equipment and a cable marking schedule for each piece of infrastructure.

8.5 Cabling – Installation Methods

8.5.1 General

The Security Services Sub-Contractor shall install cabling in a competent manner parallel to walls, floors, and ceilings, as applicable.

The Security Services Sub-Contractor shall neatly loom and continuously cable tie cabling to the catenary cable or enclose in conduit, tray, or ducting.

The Security Services Sub-Contractor shall install cabling in a manner to eliminate any possibility of strain on the cable itself or on cable terminations.

The Security Services Sub-Contractor shall not embed cabling directly in plaster, concrete, mortar or other finishes.

The Security Services Sub-Contractor shall install cabling a safe distance from items liable to become hot.

Care shall be taken in the grouping and installation of single core power cables to reduce inductive effects, including effects on surrounding metalwork.

The Security Services Sub-Contractor shall not install cabling from different distribution systems and system voltages or switchboards in the same length of conduit, duct, or junction box.

Bending radii shall be less than the manufacturers' recommendations and in all cases not less than six times the overall cable diameter.

The Security Services Sub-Contractor shall install cabling straight for at least 300 mm immediately prior to entering equipment.

Where groups of sheathed cabling are bunched together in the one enclosure, the maximum number of layers shall be two (2).

8.5.2 Cabling In False Ceiling Spaces

The Security Services Sub-Contractor shall support cabling at intervals not exceeding 1200 mm using catenary wires or approved dedicated hangers fixed to the concrete slab.

Catenary wires or approved dedicated hangers shall not be fixed to other services, pipes, ceiling rods, or other non-structural supports within the ceiling space. Cabling shall not be secured to hangers provided by other services, pipes, ceiling rods, or other non-structural supports within the ceiling space.

Cabling shall be neatly grouped together such that cables do not rest at any point on the topside of the false ceiling, lighting fittings, or other heat producing equipment.

8.5.3 Cabling In Partitions and Similar Enclosures

The Security Services Sub-Contractor shall install cabling in areas free from the protrusion of screws and similar fasteners.

The Security Services Sub-Contractor shall allow cabling to run slack.

8.5.4 Cabling Installed Vertically

The Security Services Sub-Contractor shall support cabling running in vertical ducts at intervals not exceeding 1200 mm.

Acceptable methods of support include cable tray, cable ladder, unistrut channel, or equivalent.

8.5.5 Cables On Trays

The Security Services Sub-Contractor shall fix cabling neatly to the tray, wherever possible, in a single layer and install parallel with the tray edge.

The Security Services Sub-Contractor shall install cabling such that spare space capacity of not less than 20% of each tray is provided.

The Security Services Sub-Contractor shall install cabling at fixed intervals not exceeding 1200 mm by means of approved fastenings of non-corrosive materials.

8.5.6 Cables In Trenches

The Security Services Sub-Contractor shall provide coarse sand, controlled low strength material or fine crushed rock around conduits installed underground.

The Security Services Sub-Contractor shall provide seal buried entries to ducts and conduits using waterproof seals. Seal spare ducts and conduits immediately after installation. The Security Sub-Contractor shall seal other ducts and conduits after cable installation.

8.5.7 Catenary Wiring Supports

Catenary wire support shall comply with the following:

- Catenary wires shall be anchored to the floor slab of the floor above;
- Not more than twelve (12) cable runs shall be bunched up and fixed to a single catenary wire;
- The length of any span shall not exceed seven (7) metres;
- The maximum sag of any span shall not exceed 100 mm;
- Minimum separation between catenary wires shall be not less than 150 mm;
- Minimum separation between catenary wires and high temperature pipes and steam pipes shall be not less than 300 mm; and,
- The Security Services Sub-Contractor shall adhere to cable manufacturers' recommended minimum bending radii and installation practices.

8.6 Cable Types

8.6.1 Speaker Cabling

The speaker cabling shall be twin twisted 16AWG minimum.

The Tenderer shall submit details of the proposed cabling with his tender.

8.6.4 Fibre Optic Communications Cable

If required all fibres shall be 50/125 µm OM3 multimode with external grade sheath components capable of running 10 Gigabit. A minimum of four (4) core shall be run to each camera and a minimum of six (6) core for each building run.

The Security Services Sub-Contractor shall provide a minimum of 50% spare capacity.

The minimum bend radius of fibres must be no less than the manufacturers' recommendations.

8.6.5 Copper Communications Cable

All copper cabling shall be four pair Category 6 to AS3080.

8.6.6 Connectors

The Security Services Sub-Contractor shall provide modular sockets to comply with the following:

- RJ45 8-way modular sockets;
- Insulation displacement type terminal strips permanently connected to modular sockets;
- Meet AS3080 requirements;
- Labelled with model number and AUSTEL approval number; and,
- Pair assignment of AS3594 (T568A).
- Optical fibre sockets shall be LC connectors:
 - To AS3080.

SECTION 9**TESTING & COMMISSIONING****9.1 General**

The Security Services Sub-Contractor shall provide submittals with a unique consecutive number and date of submission.

Documents evidencing approval of regulatory authorities shall be provided before Completion or other specified dates to be supplied within seven (7) days of completion of installation.

No material, equipment or nominated items requiring approval shall be used until written formal approval has been obtained.

The Security Services Sub-Contractor shall comply with the following:

- Provide sufficient competent personnel, equipment and test instruments necessary for the testing and commissioning of the installation;
- Pre-plan and schedule all tests and submit such information for approval not less than two (2) weeks before commencement of commissioning;
- All systems shall be completely tested and commissioned by appropriately qualified Engineer and/or technical personnel;
- Audit and provide certification of compliance for each sub-system within this specification and all applicable Standards;
- Structured commissioning sheets on Company letterhead shall be provided detailing the exact procedure to be conducted to verify the performance of each sub system as fit for purpose, compliance with specification and all applicable Standards. Commissioning sheets shall be signed and dated by the Engineer and/or Technician conducting the testing;
- All fibre, data, and coaxial cabling systems used to support the electronic security system shall be tested with an appropriate meter capable of producing a dated printout test result to relevant Australian and International Standards for the cabling installation type. The Security Services Sub- Contractor shall provide printouts of all tests conducted to the Client's Representative for review;
- Utilise Engineers/Technicians or employ the professional services of a commissioning Engineer where necessary, and;
- All test and commissioning requirements shall be completed prior to the commencement of the Defects Liability Period. In addition, payment of final invoicing shall only be approved on completion of all testing and submission of all test record documentation.

9.2 Unwitnessed Commissioning (Pre-Commissioning)

Notice of fourteen (14) calendar days is required so that the Client's Representative can witness the commissioning.

Before lodging this Notice, the Security Services Sub-Contractor shall conduct all pre-commissioning tests on all equipment.

Should any test fail, the Security Services Sub-Contractor shall determine the cause of the failure, correct the fault and repeat the test.

The Security Services Sub-Contractor shall arrange all the necessary technical and other staff in addition to test equipment, including at least two (2) hand-held, two way radios to test adequately the installation.

All panels, power supplies, detection devices, keypads, and intercoms shall be inspected and tested for correct operation.

The Security Services Sub-Contractor shall:

- Provide a temporary logbook at the Client's Representative's Office to record details of alarms and/or service or repairs;
 - Carry out any final adjustments and record all adjustments in the system logbook; and,
- Provide draft "As Installed" documentation inclusive of operating instruction, technical and other manuals, drawings and system programming details (including code numbers), areas and sectors assigned to the alarm system.

9.3 Witnessed Commissioning

The Security Services Sub-Contractor shall carry out the following commissioning procedures, testing, checking and adjustments in the presence of the Client's Representative to demonstrate the installed systems complies with the Specification:

- Inspect installation;
- Demonstrate full system functionality;
- Provide a structured staff training and familiarisation session for the Client's nominated staff. The training session shall cover as a minimum:
 - Function and operation of various systems (generally);
 - Access and Password Protection;
 - Indicate in simple terms how to visually inspect/investigate for system tampering on detection devices; and,
 - A copy of the training material and program shall accompany the Witnessed Commissioning Application Form.
- System housekeeping;
- At completion of the staff training session, hand over all keys, access codes and final "As Installed" documentation to the Client's Representative and obtain a signed statement from the Client's Representative that handover has been satisfactorily; and,
- Supply a list of user names, passwords, and access codes programmed into the system to the Client's Representative. All after-hours numbers, keys, and procedures shall be arranged with, and agreed to by the Client's Representative.

Should any test fail during the process of witnessed commissioning, the commissioning may be suspended at the discretion of the Client's Representative until such time as the cause of the failure is determined, the fault corrected, and the test repeated.

The cost of repeating commissioning procedures or completing those procedures missed due to previous failure, inclusive of costs to the Client's Representative and associated Consulting Engineers shall be borne by the Security Services Sub-Contractor.

Acceptance of the system based on the commissioning tests shall not absolve responsibility should any defects appear later, due to poor workmanship of faults in equipment supplied under this Contract.

9.5 Test and Installation Instruments

The Security Services Sub-Contractor shall supply all instruments and appliances necessary to complete the performance tests.

The Security Services Sub-Contractor shall ensure that all test instruments have been checked for accuracy prior to their use; including, but not limited to:

- Manufacturers' checks; or,
- Any approved laboratory checks.

The Security Services Sub-Contractor shall provide calibration certificates if requested.

PA System test equipment may include the following:

- Sound Level Meter
- Audio Analyser

9.6 Handing Over

Prior to handing over of the installation, the Security Services Sub-Contractor shall adopt the following procedures:

The Security Services Sub-Contractor shall:

- Carry out all preliminary testing, checking and adjusting of the installation before forwarding notification that the installation is considered to have reached Completion;
- Provide installation manuals together with post-Contract drawings and documentation as specified, and,
- Review and adjust all programming, including user access profiles six to eight weeks following handover.

Completion of the works will be certified only after the system has been inspected, tested, and approved, all manuals and drawings have been received and approved, and all other of the above requirements fulfilled.

9.7 Defects Liability (Warranty) and Maintenance Service

9.7.1 General

The Defects Liability Period will commence at the date of completion of all works required under this Specification.

The duration of the Defects Liability Period will be at least twelve (12) calendar months from the date of completion.

An additional twelve (12) months defects liability may also apply, should this option be accepted, extending the Defects Liability Period to twenty-four (24) months from the date of completion.

This clause applies irrespective of the fact that such part or parts may have been previously accepted. The Security Services Sub-Contractor shall warrant that all aspects of the Security Services installation at the site, which the Client's Representative has not otherwise accepted in writing, meet the requirements of this Specification. Any devices subsequently found that do not meet these requirements shall be treated as a defect and shall be rectified by the Security Services Sub-Contractor as detailed below.

Within seven (7) days of the commencement of the Defects Liability Period, the Client's Representative will provide a list of defective items to the Security Services Sub-Contractor.

The Security Services Sub-Contractor shall make good the defective items within twenty eight (28) calendar days of the commencement of the Defects Liability Period.

Defective items not rectified within the stated period will result in an extension to the Defects Liability Period equal to this delay as calculated by the Client's Representative.

During the Warranty Period, defined as the Defects Liability Period, the Security Services Sub-Contractor shall undertake the following:

- Replace or make good any part or parts which may prove faulty in design, workmanship or material;
- Rectify all faults and defects (hardware and software), which occur during the Defects Liability Period;
- Provide warranty of the entire electronic security and surveillance installation(s) including all parts, labour and peripheral equipment;
- Renew or modify any items of equipment and/or group of items and/or complete system that do not comply with the operating conditions and performance specified during the period of twelve (12) calendar months after the date of completion.
- Include for all labour and all incidental costs for the removal and replacement of defective parts or components;
 - Perform the required works as instructed in writing within seven (7) days of such notices; and,
 - Test all replaced items and show that the system operates as designed.

Failure to rectify defects found during the Defect Liability period will result in the Client's Representative engaging others to finish the required works. The costs of these works will be deducted from payments owing or billed.

At the end of the Warranty Period, the Security Services Sub-Contractor shall pass on to the Client's Representative any remaining warranty from equipment manufacturers and/or suppliers. The Security Services Sub-Contractor shall provide details of all warranties in the Maintenance Manuals.

9.7.2 Maintenance Service

The Security Services Sub-Contractor shall meet the following Maintenance requirements during the Defects Liability Period:

- Routine maintenance of the entire electronic installation including all parts, labour and peripheral equipment;
 - Maintenance of all software and firmware supplied and installed; and,
 - Call out service.

The Security Services Sub-Contractor shall maintain, via periodic maintenance, twenty-four (24) hour breakdown call out service and a "Hot Line" support facility, the security systems in a proper, safe and efficient operating condition.

Only personnel approved in writing by the Client's Representative who are qualified, competent, licensed technicians shall be engaged on these works.

Any repetitive faults, which occur at the Site, shall be periodically (monthly) reported in writing to the Client's Representative.

9.7.3 Software Warranty

Where software or firmware is supplied, it shall comply with the following:

- Be guaranteed to be free from any virus;
- Include active anti-virus software with any operator terminal or CPU supplied;
- Provide throughout the Defects Liability Period upgrades of the anti-virus software;
- Be fully licensed to comply with the software vendors' requirements; and,
- Provide details of software licenses and copyright information.

9.7.4 Routine Maintenance

The Security Services Sub-Contractor shall undertake routine maintenance and servicing required at monthly intervals from the date of completion to the end of the Defects Liability Period. On arrival at the site, the Security Services Sub-Contractor shall introduce himself to the Client's Representative, check any entries made in the logbook since the previous attendance to the site and enquire about the performance of the system. The Security Services Sub-Contractor shall provide the following minimum services during periodic routine maintenance visits:

- Test the operation of all essential services power equipment and check all 240-volt supplies feeding the system;
- Check that all panels and termination cabinet connections and contacts are free from corrosion and clean where necessary;
 - Inspect visually all wiring and conduits for tampering and damage;
- Inspect, test and clean all field devices and ensure that all operational and reporting functions occur as specified;
- During the Defects Liability Period, report any faulty or defective items found during the inspection to the Security Services Sub-Contractor for the rectification.
- During the Optional Long-Term Maintenance Contract, the Security Services Sub-Contractor shall report any faulty or defective items found during the inspection to the Client's Representative within two (2) business days.

The Security Services Sub-Contractor shall record the result of each service visit in the on-site logbook. These shall include comments on the functioning of the system, work carried out, and items requiring corrective action, adjustments made, name of service technician, date, and time of the works conducted. The Security Services Sub-Contractor shall obtain the signature of the Client's Representative.

The Security Services Sub-Contractor shall give written notice one week prior to any visit involving work, which will substantially affect the normal operation of the system. The Security Services Sub-Contractor shall perform any work, which affects the normal operation of the system at least two hours outside the Client's Representative's normal business operating hours, unless the prior consent of the Client's Representative is obtained.

9.7.5 Random Testing

The Client's Representative may conduct random tests on any or all parts of the installation at any time during the Defects Liability and Optional Long Term Maintenance period.

In the case that significant operational or functional defect are found to exist within the installation, the Security Services Sub-Contractor shall provide an additional routine maintenance visit at no additional cost.

9.7.8 Software And Firmware Maintenance

The Security Services Sub-Contractor shall perform maintenance for all software and firmware supplied and installed. The Security Services Sub-Contractor shall provide the following during maintenance visits:

- Undertake detection and correction of all software defects or "bugs";
- Provide software and firmware updates to the current release version where defects occur; and,
- Provide additional training in any new or changed features resulting from any update.

9.7.9 Callout Servicing Requirements - "Hot Line"

The Security Services Sub-Contractor shall provide a 24-hour "Hot Line" Operational Support telephone contact number to support the Client's operational needs and advise the Client's Representative of the emergency telephone number.

The Security Services Sub-Contractor shall provide all materials, parts, transport, and labour as part of the call out service including:

- Provision of a 24 hour per day, 365 day per year telephone answering service for call outs for critical faults;
- Respond to call outs within the guaranteed maximum response times following notification as follows:
 - Telephone response by the Service Technician with fifteen (15) minutes;
 - A Technician shall be made available on site within two (2) business hours for metropolitan locations and next business day for regional locations;
 - Rectify all critical faults, as determined by the Client's Representative, within four (4) hours of attending site; and,
 - Rectify all non-critical faults within two (2) working days following notification;
- Record the result of each call out in the on-site logbook. Include comments on the functioning of the system, work carried out, items requiring corrective action, adjustments made and name of service technician. Obtain the signature of the Client's Representative's designated representative;
- Provide a summary of all faults reported and the corresponding actions taken to the Client Representative in Microsoft Excel[®] format each month. The summary sheet shall include as a minimum the following information:
 - Description of the fault reported;
 - Time and date of the fault reported;
 - Time and date of the telephone response;
 - The type of fault, i.e., Critical or Non Critical;
 - Time and date of the technician's attendance onsite;
 - Time and date of the fault rectification; and,
 - Description of the work carried out including items requiring corrective action, adjustments made and name of service technician; and,

If repairs cannot be carried out within the periods described above, the following process may be employed until such repairs can be carried out:

- Notify immediately the Client's Representative of the cause of the breakdown and the expected time till rectification; and,

Whenever required by the circumstances or requested by the Client's Representative, a Technician shall be made available on site to examine and repair any aspect of the equipment within one (1) business day. This technician shall be competent and qualified to undertake such work as is required. No circuit shall be isolated without the authority of the Client's Representative. The exception to this is where it is considered that not to do so would constitute a hazard to persons and/or equipment. Charges for authorised after hours attendance shall be in accordance with the agreed hourly rate provided as part of the tender.

SECTION 10 AS INSTALLED DOCUMENTATION

10.1 General

The Security Services Sub-Contractor shall provide the following documentation as part of the scope of works:

- Day-to-day operation provided on a single laminated sheet;
- Operating manuals;
- Installation manuals; and,
- Maintenance manuals.

The Security Services Sub-Contractor shall provide three (3) copies of all manuals and “As Installed” documentation (including drawings) to be presented in hardcopy format and one (1) copy of ALL documentation on CD-ROM correctly indexed using industry standard file display format, i.e., PDF or approved equivalent.

“As Installed” drawings on CD-ROM shall be provided in AutoCAD 2016, or other approved, format.

10.2 Operating Manuals

The Security Services Sub-Contractor shall provide complete sets of operating manuals that include the following:

- Operating handbooks;
- Operator instruction manuals; and,
- Training manuals together with interactive teaching aids (via CD-ROM).

10.3 Installation Manuals

The Security Services Sub-Contractor shall provide complete sets of installation manuals that include the following:

- Full description of the Installation and the functionality of the various elements involved;
- “As Installed” drawings with a legend of symbols where applicable that include:
 - Schematic wiring diagrams with correct circuit and termination identification;
 - Schematic wiring diagrams of Printed Circuit boards;
 - Final equipment layouts and locations;
 - Electrical distribution schematics;
 - All structural penetrations;
 - Fabrication drawings of all non-standard equipment;
 - Conduit runs;
 - Cable tray, catenary wire and duct routes and details of installation; and,
 - Rack layout elevations.

The general format to be followed shall be:-

Section 1 Index

All sub-divisions of each section including lists of drawings, equipment and similar shall be indexed for quick reference.

Section 2 General Description of Services

Each individual system shall be included as a sub-section as appropriate. Full details of any system which requires regular maintenance shall be included. The function of each system or sub-system shall be described.

Section 3 As Installed Drawings

A complete set of As Installed Drawings shall be included in the Installation Manual.

Section 4 Equipment

All major items of equipment installed shall be listed complete with manufacturer's name, model, and/or type No., Serial No., size, design ratings in sub-divided sections as for Section 2 above (i.e. all relevant data necessary for re-ordering or replacing).

Section 5 Installation Maintenance & Operating Instructions

Manufacturer's installation, maintenance and operating instruction for each system shall be included and sub-divided as for Section 2. A comprehensive maintenance schedule to be followed throughout the Warranty Period shall be included along with copies of all data relating to commissioning testing.

Section 6 Plant Operating Instructions

A complete description and correct sequence of all actions necessary to operate each system shall be provided and sub-divided as for Section 2. Full operation on such items as normal and abnormal dial readings and protection equipment settings shall be included. Information on the immediate action to be taken in the event of hazardous conditions arising shall be provided concluding with the following sentence in large lettering.

FOR SERVICE - CALL TELEPHONE NO.

With appropriate telephone number provided.

Section 7 Performance Test Results

Space for inclusion of all performance test results shall be provided and sub-divided as for Section 2. All results of progressive tests during the installation works shall be included.

If the specification requires specific performance tests to be carried out during the Defects Liability Period, the manual may be accepted without the results of tests being included. Subsequent test results shall be provided within one (1) week of completion of the test.

Further, the cabling system shall be fully documented on a cable schedule which shall detail the device location, equipment connection details, any auxiliary cabling and field cabling including cable markings and cable type. The cable schedule shall be documented on a Microsoft Excel® spread sheet.

10.4 Maintenance Manuals

The Security Services Sub-Contractor shall provide complete sets of Maintenance Manuals that include the following:

- Manufacturers' literature, diagrams, illustrations, drawings and instructions to cover every action necessary for the efficient maintenance of the installation;
- Test reports covering works tested, site tests and commissioning;
- Details of all warranties for equipment supplied; and,
- Routine maintenance schedule detailing period of maintenance and activities undertaken.

10.5 Manual Presentation

The Manuals shall contain only information directly relevant to the project. General brochures and descriptive literature not totally applicable to the works under the project are not to be included. Where literature contains reference to alternative models and options on equipment not supplied under the Contract such references shall be deleted or marked "NOT APPLICABLE".

Manufacturers' literature will be assessed on its suitability of purpose and reproduction. If any documentation is considered unsuited to its purpose it shall be substituted with written (typed) text. If illegible copies are included in final draft or should any material be unsuitable for copying, the Security Services Sub-Contractor shall include original literature to identify clearly particular items incorporated in the work. Text shall be factual and written in clear, concise English language, easily understood by tradesmen, who may not be familiar with the equipment.

Equipment and component designations shall be consistent throughout all documentation and installation works.

Data which is provided by others shall be collated and included in the manual so that the manual forms an integrated whole. The Security Services Sub-Contractor shall submit a draft of the proposed Manuals for assessment not less than four weeks (4) prior to the date of Completion. A further draft copy of each manual may need to be submitted for approval prior to final printing. The completed Manuals shall be compiled and supplied prior to completion of the works.

The Security Services Sub-Contractor shall present the Manuals to comply with the following:

- International A4 size, with stiff plastic covers and shall be blue in colour;
- Face cover, spine and cover sheet shall bear wording as directed and approved;

- The binding shall be of loose leaf type with all pages machine punched and shall permit pages to lie flat and enable easy insertion and removal of pages;
- A minimum of three (3) rings shall be used;
- Good quality, durable printing paper (minimum 80 gsm) shall be used for text, printed on one side only;
- Drawings, illustrations, diagrams and photographs shall be sheets of a height not exceeding the major dimension of other pages;
- Drawings shall be folded type, with no part of the drawing obscured by preceding pages. Drawings shall be folded in their length to fit covers and put into plastic inserts to enable easy removal;
- Each section shall be started on a new page, separated from other sections by a stiff indented divider;
- Each page shall be sequentially numbered or otherwise identified, for quick and easy reference; and,
- Each paragraph shall be numbered or otherwise identified, for quick and easy reference.

10.6 TRAINING

10.6.1 General

The Security Services Sub-Contractor shall provide training in the correct use, operation, and maintenance of the system. Training shall be provided to groups as follows:

- User training; and,
- Operator training.

The Security Services Sub-Contractor shall provide all instructions and full support resources including course outlines, training materials and instruction notes. The Security Services Sub-Contractor shall provide all necessary test equipment and incidental materials necessary to conduct the training and any other item or activity required to train properly the end users' personnel.

10.6.2 User Training

The Security Services Sub-Contractor shall provide user-level training in use of the new system that includes the following:

- Short training sessions on the main features of the system;
- Issue of a System User Code to each attendee; and,
- Schedule enough sessions to cover all users.

10.6.3 Operator Training

The Security Services Sub-Contractor shall provide for operator-level training to enable operators to be fully familiar with the system that includes the following:

- Cater for operators of different skill and authority levels;
- Be conducted on site on a fully complete and configured system;
- Enable operators to become fully familiar with all aspects of the operation of the system;
- Be structured to provide operators with sufficient proficiency to perform their duties efficiently;
- Provide an introduction to the system in the context of the site and formal instruction detailing system operation and applicable procedures relevant to the site;
- Focus on general operational techniques, control functions, including programming functions, menu functions and basic fault finding techniques;
- Provide charts and diagrams to explain principles; and,
- Schedule enough sessions to cover all operators.

The Security Services Sub-Contractor shall provide a full set of typed reference notes for each attendee at the commencement of the course. Provide a draft syllabus of the content of the operator level training course together with a course schedule of times, dates and venues for review and approval prior to conducting the training course.

APPENDICES

APPENDIX I

TENDER FORM

**SECURITY SERVICES TENDER
LTA KARAVI WEIGHBRIDGE STATION
KARAVI, BA, FIJI ISLANDS**

We, the undersigned having examined the Drawings and Specification hereby offer to execute and complete the whole of the Works required to be done, as shown on the said Drawings and described by or referred to in the Specification and for the Fixed Lump Sum of:

(FJD\$.....) which includes all Contingency, Provisional and P.C. Sums and is a Fixed Lump Sum V.A.T. inclusive without provision for fluctuations in the cost of labour and materials. AS WITNESS OUR HANDS THIS.....day of 2019.

SIGNATURE OF TENDERER.....
.....

OFFICE STAMP
ADDRESS.....

WITNESS [SIGNATURE AND BLOCK CAPITALS].....

ADDRESS.....

OCCUPATION.....

DATE.....

We confirm that our time for completion iscalendar weeks.
The Tender shall be open for acceptance for a period of sixty (60) days.
The Principal does not bind himself to accept the lowest or any Tender.
The documents must not be altered in any way. Any special observations should be made in a separate letter attached to this Tender. Please return documents with Tender.

Name of Tenderer _____

Signature _____ **Date** _____

APPENDIX II SUMMARY OF TENDER**PRINCIPAL:** LAND TRANSPORT AUTHORITY**SHEET 1 OF 1 SHEET****PROJECT:** LTA KARAVI WEIGHBRIDGE STATION
KARAVI, BA, FIJI ISLANDS**PROJECT NO:** 7835**SPECIFICATION:** SECURITY SERVICES**DATE:** MAY 2019

(To be filled and submitted with the Tender Form)

ITEM	DESCRIPTION	PRICE (VEP)
a)	Preliminary and General	\$
b)	Supply and installation of Network Video Recording system and associated accessories.	\$
c)	Supply and installation of the CCTV cameras and associated cabling.	\$
d)	Supply and installation of the Monitoring Screen and associated accessories.	\$
e)	Supply and installation of the Biometric Access Control system and associated cabling.	\$
f)	Supply and installation of cable ducts, conduits and cabling support systems.	\$
g)	Conduct final system configuration, testing and commissioning.	\$
h)	Any other items not included above.	\$
i)	Supply of shop drawings	\$
j)	Supply of As Installed drawings and manuals	\$
k)	Twelve (12) months maintenance	\$
l)	Contingency Sum	\$5, 000.00
	Total Tender Price (VAT Exclusive)	\$
	VAT @ 9%	\$
	TOTAL TENDER PRICE (VAT Inclusive)	\$

Name of Tenderer _____

Signature _____ Date _____

**APPENDIX III SCHEDULE OF TECHNICAL DATA
(To be completed and submitted with Tender)**

PRINCIPAL: LAND TRANSPORT AUTHORITY

SHEET 1 OF 2 SHEETS

PROJECT: LTA KARAVI WEIGHBRIDGE STATION
KARAVI, BA, FIJI ISLANDS

PROJECT NO: 7835

SPECIFICATION: SECURITY SERVICES

DATE: MAY 2019

Two loose copies of this Schedule are supplied with this Specification. One copy shall be completed, signed by the Tenderer and returned with his Tender. The other copy is for the Tenderer's retention. Tender shall be regarded as not complying with this Specification if the information required by this Schedule of Technical Data is not supplied with the Tender. Tenders are to be based on equipment etc., as specified. Alternatives may be submitted, but must be clearly described to receive consideration. For each alternative, an alternative tender price must be submitted.

Name of Proposed Sub Contractor/Supplier

Sub-Contract Equipment

1.
2.
3.
4.
5.

Comparable Work Carried Out by the Tenderer and Approximate Value

1.	\$.....
2.	\$.....
3.	\$.....
4.	\$.....
5.	\$.....

**APPENDIX III SCHEDULE OF TECHNICAL DATA
(To be completed and submitted with Tender)**

PRINCIPAL: LAND TRANSPORT AUTHORITY

SHEET 2 OF 2 SHEETS

PROJECT: LTA KARAVI WEIGHBRIDGE STATION
KARAVI, BA, FIJI ISLANDS

PROJECT NO: 7835

SPECIFICATION: SECURITY SERVICES

DATE: MAY 2019

1. NETWORK VIDEO RECORDER (NVR)

Manufacturer _____

Type _____

2. CAMERA – WIDE ANGLE

Manufacturer _____

Type _____

3. CAMERA – FIXED BULLET

Manufacturer _____

Type _____

4. MONITORING SCREEN

Manufacturer _____

Type _____

5. BIOMETRIC SYSTEM

Manufacturer _____

Type _____

Name of Tenderer _____

Signature _____ **Date** _____

APPENDIX IV SCHEDULE OF RATES

PRINCIPAL: LAND TRANSPORT AUTHORITY

SHEET 1 OF 1 SHEET

PROJECT: LTA KARAVI WEIGHBRIDGE STATION
KARAVI, BA, FIJI ISLANDS

PROJECT NO: 7835

SPECIFICATION: SECURITY SERVICES

DATE: MAY 2019

The following of rates shall be used as a basis to value variations (either additions or deletions) and progress claims for the Contract.

Rates shall include all overheads (including on and off site supervising staff, allowance etc.), profit. (Excluding VAT)

Rates for equipment and materials are that delivered to site without installation.

Item	Description		Unit Price (VAT Exclusive)
1.	Licensed Technician	per Hour	\$
2.	Technician	per Hour	\$
3.	Unskilled Labour	per Hour	\$
4.	Network Video Recorder	per unit	\$
5.	Camera – Wide Angle	per unit	\$
6.	Camera – Fixed Bullet	per unit	\$
7.	Monitor Screen	per unit	\$
8.	Biometric Reader	per unit	\$
9.	Cat 6 Cabling	per metre	\$
10.	Cat 5e Cabling	per metre	\$
11.	Cable duct	per metre	\$

ON COST PERCENTAGES MARK-UP

12.	Labour	%
13.	Materials	%
14.	Plant	%

Name of Tenderer _____

Signature _____ **Date** _____

APPENDIX V TENDER CHECKLIST

PRINCIPAL: LAND TRANSPORT AUTHORITY

SHEET 1 OF 1 SHEET

PROJECT: LTA KARAVI WEIGHBRIDGE STATION
KARAVI, BA, FIJI ISLANDS

PROJECT NO: 7835

SPECIFICATION: SECURITY SERVICES

DATE: MAY 2019

Please ensure that you have provide the following information provided in the check list below:

ITEM	LIST	YES	NO
1	COMPLETELY FILLED APPENDIX I - TENDER FORM		
2	COMPLETELY FILLED APPENDIX II - SUMMARY OF TENDER		
3	COMPLETELY FILLED APPENDIX III - SCHEDULE OF TECHNICAL DATA		
4	COMPLETELY FILLED APPENDIX IV SCHEDULE OF RATES		
5	COMPLETELY FILLED APPENDIX V TENDER CHECK LIST		
6	TIME OF COMPLETION OF THE PROJECT IN CALENDAR WEEKS PROVIDED		
7	TENDER VALIDITY FOR 60 DAYS		
8	COST BREAKDOWN TO BE VAT EXCLUSIVE PRICE (VEP) AND FINAL COST IN VAT INCLUSIVE PRICE (VIP) FIJIAN DOLLARS		
9	EQUIPMENT SPECIFICATIONS TO BE PROVIDED IN THE TENDER DOCUMENTS SUCH AS:		
	- PERFORMANCE SPECIFICATIONS		
	- PHYSICAL PROPERTIES		
	- POWER REQUIREMENTS		
	- VOLTAGE REQUIREMENTS AND RANGES		
	- NOISE LEVELS		
10	WORKING HOURS FOR THIS PROJECT PROVIDED		
11	WARRANTY STATED		
12	TROPIC PROOF / CORRISION PROOF ALLOWED FOR		
13	PAYMENT TERMS ON A PROGRESS BASIS ALLOWED FOR		
14	ACKNOWLEDGE NOTICE TO TENDERERS (NTT) PROVIDED (IF APPLICABLE)		

Name of Tenderer _____

Signature _____ **Date** _____