



حرف و حرف

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١٤٨/١٤٣٥/٣٠-٣١/٢٠٢٦ (IUL)

3339239, 3322625, 3339279: ٣٣٣٩٢٣٩، ٣٣٢٢٦٢٥، ٣٣٣٩٢٧٩

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- 7.1 අදාළ වෛස්තවික තොරතුරු සැපයීමේදී, ප්‍රධාන වශයෙන් සලකා බැලිය යුතු වන්නේ වෛස්තවික තොරතුරු සැපයීමයි.
- 7.2 අදාළ වෛස්තවික තොරතුරු සැපයීමේදී උපරිම වශයෙන් 250,000/- (දෙසියයට දසය) පමණි.
- 7.3 අදාළ වෛස්තවික තොරතුරු සැපයීමේදී, ප්‍රධාන වශයෙන් සලකා බැලිය යුතු වන්නේ වෛස්තවික තොරතුරු සැපයීමයි.
- 7.4 අදාළ වෛස්තවික තොරතුරු සැපයීමේදී, ප්‍රධාන වශයෙන් සලකා බැලිය යුතු වන්නේ වෛස්තවික තොරතුරු සැපයීමයි.
- 7.5 අදාළ වෛස්තවික තොරතුරු සැපයීමේදී, ප්‍රධාන වශයෙන් සලකා බැලිය යුතු වන්නේ වෛස්තවික තොරතුරු සැපයීමයි.

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دسپنچر آف ورسپيچ، انڈسٽريالز ۽ انٽر ڊسپنچر ڊسپنچر

ڏک، حروفِ معاني

حصو 1 - رٽرنڊ سٽيج ۾ ڊسپنچر ۽ ڪوٺا ڊسپنچر

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Technical Requirements & Scope of Work

Project Location: K. Maniyafushi

Project Type: New CCTV System – Supply, Installation, Configuration, Testing & Commissioning

1. Project Overview

The Ministry intends to establish a new **IP-based CCTV surveillance system** at Maniyafushi to provide security and operational monitoring across residential, laboratory, storage, hatchery and marine areas.

The requirements stated in this specification represent the minimum technical requirements. Vendors may propose equipment or solutions that exceed these requirements. Any proposed alternative or equivalent solution shall be clearly identified and supported by relevant manufacturer technical documentation. The vendor shall be responsible for ensuring that the proposed solution provides a complete, compatible and operational CCTV system for the site.

The initial requirement is approximately **35 cameras**, with sufficient capacity for future expansion.

The vendor shall provide a **complete turnkey solution**, including:

- System design
- Equipment and material supply
- CCTV network infrastructure
- Cat6 cabling and containment
- Camera mounting and poles
- Installation
- Configuration
- Testing
- Commissioning
- User training
- Documentation
- Warranty and after-sales support

The final camera locations, quantities and cable routes shall be verified during the mandatory site survey.

2. Areas and Surveillance Requirements

- Accommodation building
- Laboratory building
- Warehouses
- Stock/storage areas
- Oil/fuel storage area
- Hatchery
- Bio-reactor areas
- Dining area
- Internal corridors
- Jetty
- Reef seed system area
- Grouper cage system/open-water areas
- Other critical areas identified during the site survey

General camera arrangement

Vendors may propose an alternative camera type where technically justified and where it provides equal or better coverage.

3.1 Cameras

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- High-definition IP video
- Day/night operation
- Infrared illumination
- Good low-light performance
- Wide Dynamic Range (WDR)
- Motion/event detection
- Efficient video compression such as H.265/H.265+ or equivalent
- Network-based configuration and management
- Suitable frame rate and image quality for surveillance
- ONVIF compatibility is preferred

The vendor shall submit manufacturer datasheets for the proposed camera models.

3.2 Long-Range PTZ Cameras

Long-distance surveillance is a **critical requirement** for the jetty and grouper cage/open-water areas.

The proposed PTZ cameras shall provide:

- Suitable high-resolution imaging
- Adequate optical zoom
- Pan and tilt functionality
- Day/night operation
- IR illumination
- Low-light performance
- WDR
- Suitable outdoor/marine environmental protection

For relevant long-distance areas, the system shall provide effective night-time surveillance at approximately **100–200 metres**, subject to actual site conditions.

The vendor shall clearly state in its proposal:

- Optical zoom ratio
- Lens/focal length
- IR illumination range
- Manufacturer's detection distance
- Recognition distance

- Identification distance
- Relevant technical limitations

Digital zoom shall not be considered a substitute for optical zoom.

Manufacturer technical datasheets shall be submitted to support the proposed long-range performance.

4. NVR, Recording & Storage

The CCTV system shall include a minimum:

64-channel IP NVR

The NVR shall support the initial approximately 35 cameras and provide capacity for future expansion.

The system shall provide:

- Minimum 30 days recording retention
- 24/7 recording
- Motion/event-based recording
- Camera-by-camera recording configuration where supported
- Playback and search
- Video export in standard/common formats
- Remote viewing
- User access control
- System/event logs
- Recording redundancy/failover

Where technically supported, individual cameras should be configurable for different recording modes.

Storage calculation

The vendor shall provide a storage calculation showing that the proposed storage capacity can maintain a minimum **30-day recording period**, based on the proposed:

- Number of cameras
- Resolution
- Frame rate
- Codec
- Bit rate
- Recording mode

The proposed storage capacity shall be clearly stated in TB.

5. CCTV Network & Infrastructure

A **dedicated CCTV network** shall be provided.

The preliminary PoE switch arrangement shall be:

Location	Required Equipment
Laboratory Building / Instrument Rack	1 × 48-Port PoE Switch
Accommodation Building	1 × 24-Port PoE Switch
Main Hatchery Building	1 × 16-Port PoE Switch

The NVR and 48-port PoE switch shall be installed in the existing server/instrument rack located in the laboratory building.

The 24-port switch shall be installed in the accommodation building.

The 16-port switch shall be installed in the main hatchery building.

Both switches shall be installed in a network cabinet.

The vendor shall ensure that the proposed switches have adequate:

- PoE power budget
- Network capacity
- Uplink capacity
- Ports for the proposed cameras
- Capacity for reasonable future expansion

The vendor shall provide a basic PoE and network capacity calculation.

5.1 Cabling

The vendor shall supply and install all required CCTV network cabling.

Minimum requirement:

Cat6 Ethernet cabling

The vendor shall determine the actual or estimated cable quantities during the site survey.

The quotation shall include all or if required:

- Cat6 cable
- Patch panels
- Patch cords

- RJ45/keystone components
- Cable containment
- Trunking
- Conduit
- Cable trays where required
- Cable labels
- Cable management accessories
- Junction boxes
- Weatherproof connections

Outdoor cables shall be appropriately protected against:

- Rain
- UV exposure
- Salt air
- Mechanical damage
- Water ingress

All installed network cables shall be properly terminated, labelled and tested.

6. Outdoor & Marine Environmental Requirements

The site is a small island surrounded by seawater, and **salt-air exposure is a major environmental consideration.**

All outdoor CCTV equipment and installation materials shall therefore be suitable for:

- Salt-air/marine environments
- High humidity
- Rain
- High temperatures
- Dust
- Direct sunlight
- Wind exposure

Outdoor cameras shall have a minimum **IP66 or equivalent** environmental protection rating, or better where required by the application.

The vendor shall provide suitable:

- Weatherproof junction boxes

- Cable glands
- Protective enclosures
- Corrosion-resistant mounting hardware
- Camera brackets
- PTZ mounting brackets
- Poles
- Pole mounting accessories
- Other materials required for a complete installation

7. Monitoring, Remote Access & Cybersecurity

Monitoring screens/displays will be provided by the Ministry.

Local Monitoring

Remote Monitoring

Internet-based remote viewing is preferred.

- Software licences
- Mobile applications (Native App)
- Recurring subscription fees

7.1 User Management

The system shall support a minimum of **two users** and role-based permissions.

The system should support appropriate roles such as:

- Administrator
- Operator
- View-only user

7.2 Cybersecurity

The proposed system shall support appropriate cybersecurity measures, including where supported:

- HTTPS
- Encrypted communications
- Password policies
- Secure administrator accounts
- Multi-factor authentication (MFA) (Optional)
- Firmware/software updates
- Disabled or changed default credentials
- Secure remote access
- User permissions
- System/audit logs

All default passwords shall be changed before commissioning.

8. Installation, Commissioning & Handover

The vendor shall be responsible for the complete:

Design → Supply → Installation → Configuration → Testing → Commissioning → Handover

The vendor shall conduct system testing including, as applicable:

- Camera connectivity
- Image quality

- Day/night operation
- IR operation
- WDR
- PTZ operation
- Network Keyboard Operation
- Optical zoom
- PoE operation
- Network connectivity
- Recording
- Playback
- Video export
- Storage/30-day retention
- Recording redundancy/failover
- Remote PC access
- Mobile access
- User permissions
- Power failure/recovery operation

The system shall continue operating from the available UPS during mains power failure, subject to the capacity of the Ministry-provided UPS.

8.1 Corporate Network Integration

The Ministry will handle integration with the corporate network.

The vendor shall be responsible for commissioning the CCTV system and providing all information required by the Ministry's IT/network team.

8.2 Documentation

The vendor shall provide the following at handover:

- Equipment make/model/quantity schedule
- Final camera layout
- CCTV network diagram
- IP address schedule
- Cable schedule

- Storage calculation
- Equipment datasheets
- User/admin manuals
- Configuration information
- Warranty certificates
- Testing and commissioning report
- As-built drawings
- Configuration backup where applicable

The vendor shall provide basic training to designated Ministry personnel.

9. Manufacturer, Warranty & Technical Support

The Ministry recommends reputable manufacturers such as:

- Hikvision
- Dahua
- Uniview

Equivalent reputable manufacturers may be proposed.

The proposed equipment shall have:

- Appropriate technical capability
- Long-term product support
- Firmware/software support
- Availability of replacement equipment
- Good maintainability
- Reliable local or regional technical support
- After-sales service

The vendor shall clearly state the manufacturer, model and technical specifications of major equipment.

Warranty

Minimum warranty requirement:

1 year

The warranty shall cover equipment, installation and workmanship.

The vendor shall provide details of:

- Warranty coverage
- Warranty claim procedure
- Technical support
- Local/regional support arrangements
- Expected response arrangements

10. Vendor Proposal & Quotation Requirements

1. Proposed CCTV system design
2. Proposed camera layout
3. Equipment make and model
4. Manufacturer datasheets
5. NVR/storage specification and calculation
6. PoE/network capacity calculation
7. Basic network topology
8. Installation approach
9. Warranty and support information
10. List of assumptions/deviations/exclusions

Equipment exceeding the stated minimum technical requirements may be proposed and shall be considered compliant where the minimum requirements are met or exceeded.

The quotation shall be submitted in **MVR** and include an itemized BOQ.

No.	Item
1	Outdoor fixed bullet cameras
2	Indoor turret cameras
3	PTZ cameras

4	64-channel NVR
5	Recording HDD/storage
6	Network Keyboard
7	48-port PoE switch
8	24-port PoE switch
9	16-port PoE switch
10	9U Network Cabinet
11	Cat6 cabling
12	Cable containment/trunking/conduit
13	Patch panels/patch cords/accessories
14	Camera brackets/mounting hardware
15	Poles and pole accessories
16	Junction/weatherproof boxes
17	Other required network accessories
18	Installation
19	Configuration
20	Testing & commissioning
21	Training & documentation

All materials and accessories necessary for a **complete operational CCTV system** shall be included in the vendor's proposal.

11. Optional Items

The following may be proposed separately as optional items and shall not be included in the base solution unless specifically required:

- Additional cameras
- Additional PTZ cameras
- Additional storage
- Extended warranty
- Other recommended enhancements

Optional items shall be clearly separated from the main quotation.

Key Requirements Summary

Requirement	Minimum Requirement
Initial Cameras	Approx. 35
NVR	Minimum 64 channels
Recording	Minimum 30 days
Recording Modes	24/7 + Motion/Event
Outdoor Cameras	Fixed Bullet
Indoor Cameras	Turret
Long Distance	PTZ
Long-Range Night Surveillance	Approx. 100–200 m for applicable areas
Optical Zoom	Required for long-distance surveillance
Network Keyboard	Required for control/display room
WDR	Required
Low-Light	Required
IR	Required where applicable
CCTV Network	Dedicated network
PoE Switches	48-port + 24-port + 16-port
Cabling	Cat6
Remote Viewing	PC + Mobile
Users	Minimum 2
User Permissions	Required
Environmental	Marine/salt-air suitable
Outdoor Protection	Minimum IP66 or equivalent
Cybersecurity	Required
NVR Redundancy/Failover	Required
Installation	Vendor
Configuration	Vendor

