



# University of Wollongong

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## Closed Circuit Television Design Standard

Version 1.07 – 25 March 2011

## QUALITY SYSTEM

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## VERSION CONTROL SYSTEM

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# 1. Overview

Closed circuit television (CCTV) systems form part of the overall security strategy implemented by the University of Wollongong (UOW).

The systems are used to provide the following key functions:

- a. Real time surveillance;
- b. Recording of real time events and historical video data for video evidence of a security event; and
- c. Provide a deterrent to criminal and unacceptable behaviour.

To obtain optimum performance the CCTV systems may be interfaced with other building services, in particular electronic monitoring and access control systems.

This document shall be used as the design standard for all future CCTV installations and upgrades at UOW. The CCTV Design Standard shall be used in conjunction with UOW's Documentation Standard, Electrical Services Design Standard and UOW's Specification for Voice and Data.

## 1.1 Objective

The objective of this design standard is to outline the functional, installation and technical requirements for the IP CCTV system. The designer shall use this standard as the basis for new systems or extensions to the existing system at UOW. Whilst the design standard provides guidance on the minimum acceptable standard to UOW, it is incumbent upon the designer to ensure that the final design satisfies site-specific operational, logistical and performance requirements and meets UOW's security objective for the facility. (ie. a superior standard may be required to satisfy specific objectives)

Prior to undertaking the conceptual design, a risk analysis must be performed to determine the level of risk anticipated for the specific area. Where risks are identified that it is appropriate to use CCTV as part of the mitigation strategy, the environmental conditions and occupancy profile will also be taken into consideration.

## 1.2 System Description

The CCTV system installed at UOW is an Internet Protocol (IP) CCTV system. The system utilises digital technology for recording and for transmitting video images via UOW's Local Area Network (LAN). The IP CCTV system allows the flexibility for additional cameras to be added to the system at any time and be viewed on any workstation on the campus with a network connection and software licence.

The CCTV system currently utilised by UOW is a DVTel IP CCTV system. The cameras comprise digital IP cameras as well as older analogue cameras that are interfaced using analogue to digital converters.

The operators terminal and control equipment is located within building 116, located on Northfields Avenue. The system utilises UOW's IT network to transmit digital images from the IP cameras to monitors for viewing and servers for recording purposes.

## 2. Design Process

The process shown below in Figure 1 shall be followed to achieve UOW's desired outcomes:

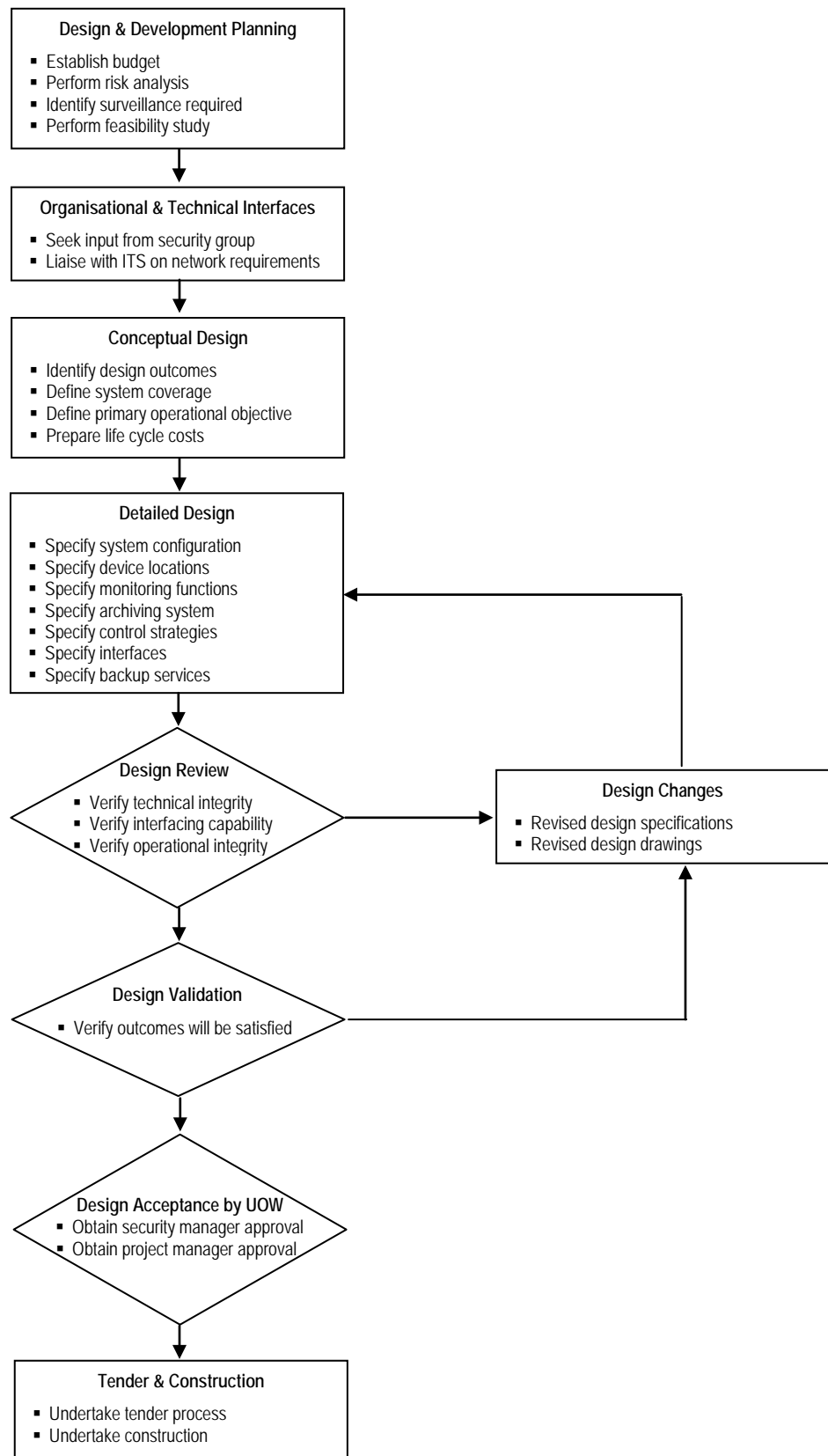


Figure 1 - Process Flow

## 2.1 Design of Configuration Parameters & Control Strategies

As part of the detailed design, operational control strategies shall be developed to ensure efficient utilisation of the equipment. The designer shall liaise with UOW Security and business area managers to identify the design priorities. The design spreadsheet attached in Appendix A shall be completed as part of the following procedure for extending or designing a new system:

- a. Identify the location in which surveillance is required and assess the associated risks;
- b. Identify the primary subject in the location of surveillance and the type of view required. The primary subject may be a fixed point of interest (eg. an Automatic Teller Machine, Point of Sale Terminals, Laboratory entrance etc) or a general subject of interest (eg. Outdoor bar area)
- c. Determine the primary purpose of surveillance. The different surveillance purposes include:
  - i. Historical analysis - where the primary purpose is to record video evidence for later analysis;
  - ii. Deterrence - where the camera is overtly visible as a means of deterring undesirable behaviour;
  - iii. Real-time surveillance - where the camera is actively monitored by staff; and
  - iv. Object video analysis - where the footage is analysed by software for alarm conditions.
- d. Identify the period during which surveillance is required. Cameras in some locations may not be required out-of-hours, whilst others requiring 24/7 operation may require the consideration of after-hours illumination.
- e. Identify the lighting sources in the area.
- f. Nominate the camera features required based on the camera purpose and lighting sources available. The feature options include:
  - i. Pan tilt zoom;
  - ii. IR sensitivity;
  - iii. IR lamp (integrated);
  - iv. Thermal sensitivity;
  - v. Tamper proof enclosure; and
  - vi. Weatherproof enclosure.
- g. Specify the PTZ home location, if applicable. If used, this will likely be a view of the primary subject.
- h. Nominate the monitoring features required. These include:
  - i. Capability to activate a monitor display on alarm activation;
  - ii. Alarm ID for integration if applicable;
  - iii. Whether the camera should be included as part of an existing video monitor rotation.
- i. Determine the field of vision required, and correspondingly, the percentage of the screen that the subjects will occupy. This will determine whether the video can be used for observation, detection, recognition or identification.
- j. Determine the rate of motion of subjects within the field of vision.
- k. Identify the frame rate required for recording purposes.
- l. Calculate the network bandwidth required to support the video and the associated hard disk storage requirements.
- m. Prepare and submit a budget of all equipment required for approval.

## 3. Functional Requirements

### 3.1 General

The IP CCTV system shall operate in all light conditions, including low light environments and shall automatically compensate for changing light conditions.

In higher security installations or where the control strategy calls for video motion detection, the systems will identify spurious movements and discriminate out of normal environmental conditions.

The system shall provide alarm condition detection/activation and fully interface with the electronic monitoring and access control system.

External camera and communication devices shall be mounted within housings that are rated to IP66 and function satisfactorily in all weather conditions.

The IP CCTV system shall be designed with a scalable architecture to allow expansion through the installation of additional cameras, control and switching devices.

There shall be no limit on the number of workstations located throughout the UOW IT network.

### 3.2 Surveillance

The CCTV system cameras shall produce sharp, detailed and stable images on the monitor in sufficient detail to provide positive identification of individuals within the protected areas under all conditions of light.

Where required, wide coverage public areas shall be viewed with pan, tilt and zoom (PTZ) IP cameras, to provide close up images and tracking of events.

Fixed position and fixed focus IP cameras shall be used where a specific risk has been identified in a particular area and it is important that should an event occur it is viewed in real time or recorded.

The cameras shall be fitted with automatic light compensation devices to provide compensation for variations over a wide range of scene brightness. Where a camera must operate in total darkness, the nature of the possible events will be analysed to determine whether the situation requires a special application camera such as one that uses infra-red illumination.

Where identified in the risk analysis, cameras with "Wide Dynamic Range" shall be installed and connected into the video signal lines to overcome the possibility of the camera being blinded deliberately or accidentally by bright lights.

The suppression device shall remove unwanted highlights allowing the automatic iris control compensation to adjust to the true ambient high level.

#### 3.2.1 Operational Surveillance

The security operator workstation is the interface between the IP CCTV system and the operational security management team. The video signal from each camera shall be transmitted over the University's IT network and be viewed on any workstation with a network connection.

Camera switching shall be fast and efficient with not more than 0.5 seconds delay between switching from one camera to another.

Prior to selecting the CCTV monitor(s), control strategies will be developed to ensure maximum efficiency in terms of operational surveillance. The existing cameras and monitors will be considered in developing new control strategies and where appropriate, existing strategies will be modified to accommodate the new installation.

The design objective should be to minimise the number of monitors through alarm activation, environmental sensing, intelligent programming and sequencing and thereby reduce the dependency on the security operators to identify alarm conditions.

The security operator workstation shall be programmed to perform the following functions:

- Alarm management;
- Manual control of cameras;
- Automatic sequencing and control;
- Display of activated cameras;
- Reporting; and
- Database management.

The IP CCTV system shall be capable of allowing PTZ camera control from a workstation without the need for a dedicated operator keyboard. This shall be achieved through the use of DVTel User Licences to allow camera control via a computer keyboard and mouse.

### **3.3 Video Data Management**

Video data from fixed and PTZ IP cameras will be analysed using software as the video data is streamed into the operator workstation. An alarm signal will be flagged if an intruder or abnormality is detected.

Video shall be streamed from each camera at a fixed rate of 12 frames per second for the purposes of viewing and recording.

All IP CCTV cameras connected to the system shall digitally record for a minimum of 30 days and additional storage shall be considered for event recording. All abnormalities shall be digitally recorded for a period of no less than 30 days, and shall be capable of being utilised appropriately by the police in evidence and stored, copied and viewed without interfering with recording.

The system shall provide for video buffering of all alarm points and shall provide pre-alarm and post-alarm recording when an alarm has occurred.

Video storage capacity shall be considered at the beginning of the design process of the IP CCTV system to ensure UOW Security Service and UOW ITS are familiar with the new installation, as well as additional equipment and additional storage requirements needed for the new system to operate at its optimum performance level.

The storage capacity of the IP CCTV system shall be confirmed and approved by UOW ITS prior to installation occurring and additional storage requirements determined in consequence to the new installation. Approval of the new installation and final decision on any additional storage requirements must be obtained from the UOW Security Supervisor. The designer must incorporate into their installation budget any additional storage requirements which will be costed and provided by UOW ITS.

### 3.4 Systems Interfacing

The IP CCTV system may be interfaced with the intercom system and the electronic monitoring and access control system depending on the requirements of the specific installation. This is shown in Table 1 below.

Where PTZ cameras are used in these circumstances the cameras shall be programmed to respond to the event conditions and automatically re-orientate to monitor the location of the event.

System to be Interfaced	Interface Type	Interface Responsibility
Electronic Monitoring and Access Control	High/Low level	Security contractor
Intercom System	Low level	Security contractor

*Table 1 – Systems Interfacing*

## 4. Standards

The design shall comply with the latest versions of all relevant codes and standards in force at the time of specification. Where the designer considers a standard to be inappropriate to the circumstances, the designer shall advise the principal and seek direction. Table 2 below contains a list of the relevant codes and standards.

Issuing Body	Document Number	Title
AUSTEL	AUSTEL	Australian Telecommunication Authority requirements
Australian Communications Authority	TS 008/9	ACA Standards for cabling requirements
BCA	BCA	Building Code of Australia requirements
CIBSE	LG6:1992	Chartered Institution of Building Services Engineers. The outdoor environment
Institute of Electrical and Electronics Engineers	IEEE 802.3 IEEE 802.5 IEEE 802.af	Broadband applications Power Over Ethernet
Standards Australia	AS/NZS CISPR 14.1:2003	Electromagnetic compatibility - Requirement for household appliance, electric tools and similar apparatus - Emission
Standards Australia	AS/ACIF S009:2006	Installation requirements for customer cabling
Standards Australia	AS/NZS 1102.103:1997	Conductors and connecting devices
Standards Australia	AS 1125	Conductors in insulated electric cables and flexible cords
Standards Australia	AS 1345	Identification of the contents of pipes, conduits and ducts
Standards Australia	AS 1367:2000	Coaxial cabling systems for the distribution of analogue television and sound signals in single and multiple unit installations
Standards Australia	AS 1939	Degrees of protection provided by enclosures for electrical equipment.
Standards Australia	AS 2053	Conduits and fittings for electrical installations
Standards Australia	AS 2834 - 1995	Computer accommodation
Standards Australia	AS 3000	Wiring Rules
Standards Australia	AS 3008	Electrical installations - Selection of cables
Standards Australia	AS 3011	Electrical installations - Secondary batteries installed in buildings

Issuing Body	Document Number	Title
Standards Australia	AS 3080	Telecommunications installations - Generic cabling for commercial premises
Standards Australia	AS 3084	Telecommunications installations - Telecommunications pathways and spaces for commercial buildings
Standards Australia	AS 3085	Telecommunications installations – Administration of communications cabling systems – Basic requirements
Standards Australia	AS 3768 - 1990	Guide to the effects of the temperature on electrical equipment
Standards Australia	AS 4251	Electromagnetic compatibility (EMC) – Generic Emission Standard
Standards Australia	AS 4252	Electromagnetic compatibility - General immunity standard
Standards Australia	AS 4806	Closed Circuit Television (CCTV) Standards
Standards Australia	AS 61000	Electromagnetic compatibility (EMC)
UOW	ITS.ITS.001	Specification for Voice and Data
UOW	B&G-MAI-STA-013	Documentation Design Standard
UOW	B&G-MAI-STA-014	Electrical Design Standard
UOW	B&G-MAI-STA-011	Building Elements Design Standard
UOW	B&G-MAI-STA-015	EMAC Design Standard

*Table 2 – Relevant Standards*

## 5. Minimum Performance Standards

The following minimum performance standards shall be achieved to ensure efficient operation of the CCTV system:

Functions	Worst Case Response (seconds)
Real time camera view displayed on display monitor at the operator workstation	0.5s
Switching to a different camera view on the display monitor at the operator workstation	1s
Real time video data analysis	1s
Display of historical report from report request	5s

*Table 3 - Minimum Performance Standards*

## 6. Installation Guidelines

### 6.1 Electrical Cabling

Electrical cabling shall be sized to meet the maximum demand of the proposed equipment and the potential additional equipment likely to be connected to the final sub-circuit.

Electrical cabling shall be installed such that physical strain does not occur to any part of the cable or to the connected equipment. Cables shall be securely supported and protected from mechanical damage.

The installation or normal use of the cabling does not expose carrier personnel, cabling providers, customers or other persons to any danger.

The installation or normal use of the cabling does not adversely affect the integrity (proper end-to-end functioning) of a telecommunications network.

All cabling installed between equipment or devices shall consist of one continuous length of cable. Cabling shall be concealed wherever possible in ceiling spaces, wall cavities, risers and the like.

Prior to the connection of equipment, cabling shall be tested for continuity, polarity and disturbance.

#### 6.1.1 Conduit/Duct

All exposed internal cabling shall be installed in PVC conduits and/or duct. Conduit and duct for internal installations shall be of PVC construction with white colour, unless an existing colour scheme is in use, whereby the conduit/duct shall match the existing equipment.

External cabling shall be installed in HDPE or PVC conduit. Underground cabling shall be installed at a minimum depth of 500mm. Cable marking tape with integrated tracer wire shall be installed above the conduit to facilitate future services location.

### 6.2 Communication Cabling

Communications cabling shall be part of an overall structured cabling system, compliant with UOW ITS' Specification for Voice and Data Cabling. The type and size of communication cabling shall be selected to achieve optimum system performance.

Communication cabling shall be installed such that physical strain does not occur to any part of the cable or to the connected equipment. Cables shall be securely supported on cable trays or (where exposed) enclosed and protected from mechanical damage within conduits or duct.

All cabling installed between equipment or devices shall consist of one continuous length of cable. Cabling shall be concealed wherever possible in ceiling spaces, wall cavities, risers and the like.

#### 6.2.1 Qualifications

Personnel installing and commission cabling shall be ACMA licensed.

## 6.2.2 Conduit / Duct

Conduit and duct for internal installations shall be of PVC construction with white colour, unless an existing colour scheme is in use, whereby the conduit/duct shall match the existing equipment.

External cabling shall be installed in HDPE or PVC conduit. Underground cabling shall be installed at a minimum depth of 500mm. Cable marking tape with integrated tracer wire shall be installed above the conduit to facilitate future services location.

## 6.3 Cameras

### 6.3.1 Locations

Surveillance coverage shall be determined from the risk analysis, however the following camera locations shall be used as a guide:

- Building entry points;
- Lift lobbies;
- Carparks;
- Vehicle access points;
- Areas where dangerous or valuable goods are stored;
- Areas where monetary transactions take place.

### 6.3.2 Recommended Object Sizes

All IP CCTV equipment shall meet minimum requirements listed in *AS4806: Closed Circuit Television (CCTV) Parts 1, 2, 3 and 4*.

Where CCTV is specified for an intended purpose, the design shall conform to the following requirements:

A person of nominal height 1.6m shall occupy a portion of the image according to Table 4 below:

Purpose	Percentage of Screen (Vertical Element)
Face identification	100%
Face recognition	50%
Intrusion detection	10%
Crowd control	5%
License plate recognition (letter height)	5%

Table 4 – CCTV Object Size Requirements.

### 6.3.3 Cabling and Termination

Cameras and cabling shall be mechanically secured and protected from mechanical damage. Terminations shall be permanent and insulated to protect against faults and from interference.

### 6.3.4 Internal IP Cameras

Internal IP cameras shall be fitted with opaque tinted acrylic domed housing to physically protect the cameras as well as to prevent observation of camera direction. Where specified, vandal proof housings shall be provided and installed.

### **6.3.5 External IP Cameras**

External IP cameras shall be fitted inside enclosures that are IP66 rated and shall be weatherproof, robust, tamper resistant and fitted with sun shields. Thermostatically controlled internal blowers shall be provided to circulate air for maximum cooling during high ambient temperature conditions. Thermostatically controlled internal heaters shall be used during low ambient temperature conditions.

## **6.4 Operator Workstation**

The operator workstation CPU, LCD monitors and other peripheral devices shall be installed at the location deemed to view the CCTV cameras. Interconnecting cables shall be protected from mechanical damage and permanently connected.

The LCD monitors shall be mounted adjacent to one another to provide easier viewing of the screens.

## **6.5 Labelling**

Major system components shall be clearly labelled using black lettering on white background self adhesive permanent engraved traffolyte labels, attached to a suitable fixed part of the equipment.

Equipment labels shall identify the equipment in accordance with UOW's asset register convention.

## 7. UOW & Security Contractor's Responsibilities

### 7.1 General

The IP CCTV system installed throughout the UOW campuses is made up of a number of components which together allow the system to function. The responsibility of these components are divided between the UOW ITS department and the security contractor.

#### 7.1.1 UOW ITS Department

The UOW ITS department are responsible for the following components of the IP CCTV system:

- The Local Area Network (LAN)
- Workstations
- Monitors
- Servers
- Network connection ports
- Network switches
- Hard disk drives (HDD's)
- Assignment of IP address

#### 7.1.2 Security Installation Contractor

The security contractor is responsible for the following components of the IP CCTV system:

- Cameras
- Power Supplies
- Cabling
- CCTV System Management Software
- Camera licenses
- Software/User licenses
- Connection to network ports

Whilst UOW ITS is responsible for providing CCTV head end server hardware, the security contractor remains responsible for installation, configuration, test and commissioning of the hardware and software.

#### 7.1.3 Security Maintenance Contractor

Unless otherwise specified, maintenance of the CCTV equipment installed shall be performed by UOW's nominated security maintenance contractor. The security installation contractor shall be required to address issues during the warranty and defects liability period, irrespective of the contractor selected to perform the regular maintenance services.

## 8. Equipment

### 8.1 Cameras

#### 8.1.1 Fixed IP Cameras

The fixed IP cameras and housings listed in Table 5 below are deemed suitable for installation:

Device	Iris	Make	Model	Power
Fixed IP Camera, wide dynamic range, day/night	Auto iris	DVTel	CF-2101-1P	12VDC or 24VAC or 802.3af PoE
Fixed IP Camera, day/night colour	Auto iris	DVTel	CF-2101-0P	12VDC or 24VAC or 802.3af PoE
Fixed IP Camera, 3.3-12mm wide dynamic range, day/night in vandal resistance mini-dome housing	Auto iris	DVTel	CM-2101-21P	12VDC or 24VAC or 802.3af PoE
Fixed IP Camera, 9-22mm wide dynamic range, day/night in vandal resistance mini-dome housing	Auto iris	DVTel	CM-2101-31P	12VDC or 24VAC or 802.3af PoE
Fixed IP Camera, 9-22mm day/night colour in vandal resistance mini-dome housing	Auto iris	DVTel	CM-2101-11P	12VDC or 24VAC or 802.3af PoE
Fixed IP Camera, 9-22mm day/night colour in vandal resistance mini-dome housing	Auto iris	DVTel	CM-2101-01P	12VDC or 24VAC or 802.3af PoE
Fixed IP Camera, 1.3 Mega Pixel wide dynamic range, day/night	Auto iris	DVTel	CF-3111-1	12VDC or 24VAC or 802.3af PoE
Fixed IP Camera, 1.3 Mega Pixel wide dynamic range, day/night in vandal resistance mini-dome housing	Auto iris	DVTel	CM-3111-01	12VDC or 24VAC or 802.3af PoE
Indoor/Outdoor aluminium housing for fixed camera, forward opening hinge lid, rear link-lock latch	N/A	Pelco	EH3512	N/A
Indoor/Outdoor aluminium housing for fixed camera, forward opening hinge lid, rear link-lock latch, heater, blower, defroster	N/A	Pelco	EH3512-2	24VAC
F1.2 a spherical day and night IR lens, 2.7-12mm focal length	Auto iris	Carina	TAV2712DC	0.5V to 3V

Table 5 – Suitable fixed IP cameras and housings.

### 8.1.2 PTZ IP Cameras

The PTZ IP cameras listed in Table 6 below are deemed suitable for installation:

Device	Iris	Make	Model	Power
PTZ IP Camera, 36X zoom, wide dynamic range, day/night in vandal resistance mini-dome housing	Auto iris	DVTel	CP-2101-361P	24VAC

Table 6 – Suitable PTZ IP cameras.

The proposed use of other types of fixed or PTZ cameras shall be referred to UOW and the final selection shall be approved by UOW Security Management.

### 8.2 CCTV Power Supplies

The power supplies for the CCTV cameras shall meet the following minimum criteria:

- The power supplies will provide a 24VAC fused output via screw terminals
- Capacity should be 80% maximum load
- No plug packs shall be used
- Individually fused
- Each output circuit will have an Individual status LED indicator
- Mains input shall be fused
- The power supplies shall be CE and C-Tick approved
- Provision of mains power to PSU shall be the responsibility of the security contractor.

### 8.3 Video Management and Storage Software

#### 8.3.1 General

The CCTV management software is DVTel Latitude Network Video Management System (NVMS). The IP CCTV systems to be installed at UOW campuses shall connect to this system.

Device	Function	Model
LAT6-NT	Video management and storage software solution	DVTel Version 6
Server	Video management and storage	Windows Server 2003

Table 7 – Video Management & Storage Software

### 8.4 Communication & Switching Components

The communication of the IP CCTV system is provided by UOW ITS, therefore the UOW ITS department is responsible for supplying the hardware, network connections, and the maintenance of equipment for IP CCTV servers and software.

It is the **contractor's responsibility** to liaise with the UOW ITS department for any network requirements, to provide UOW ITS with time lines for installation of any additional network equipment and to identify the costs associated during the IP CCTV design stage at UOW. In addition, the contractor is to ensure the IP CCTV system design is compliant with the latest revision of the UOW Specification for Voice and Data.

## 9. Life Cycle Costing

The designer shall prepare life cycle costing as part of the conceptual system design. A ten-year period of financial interest shall be used as the basis of the life cycle analysis. In the case of an IP closed circuit television system these costs shall include:

- Initial cost of system equipment
- Installation costs
- Maintenance costs
- Software support and regular upgrades
- Licenses and statutory costs
- Cost of third party support for interfaces



10. APPENDIX A – CONTROL STRATEGY DESIGN SPREADSHEET

Camera ID	Location	Primary Subject	Primary Purpose of Surveillance <small>(Historical Analysis, Deterrence, Real-time Surveillance or Object Video Analysis)</small>	Period of Surveillance	Lighting Source	Camera Features Require							Monitoring Features Required			Recording Features Required <small>Frames per second required</small>
						Pan Tilt Zoom	IR Sensitivity	IR Lamp	Thermal Sensitivity	Tamper proof enclosure	Weatherproof enclosure	PTZ Home Location	Activate Display on Alarm	Alarm ID	Include in Video Rotation	
C107	Food Court	ATM	Historical analysis	24/7	Food court lighting	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	123	<input checked="" type="checkbox"/>	25
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
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						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	

Table A1 - Control Strategy Design Spreadsheet