PASSPORT TO COMPLIANCE

STAGE 2

OPERATIONAL REQUIREMENT AND SYSTEM SPECIFICATION

INTRODUCTION

With reference to relevant guidance, codes of practice and recommended standards applicable to surveillance camera technology, the purpose of this section is to provide an easy to use guide in preparing a basic operational requirement for a proposed surveillance camera system. The justification, problem analysis, objectives, scope and nature of the system will have been covered in Stage 1 (Justification and Planning) and this will prove invaluable when completing of the following sections.

Surveillance technology is changing rapidly and whilst this document does not attempt to cover all the technological aspects of a surveillance camera system it may assist those with limited knowledge to at least produce some requirements. These requirements will contribute toward the specification, design, planning, operation and maintenance of the surveillance system.

This stage will be used to identify the following:

- the purpose of observation
- operational issues
- system requirements
- engineering issues
- maintenance

Within the following pages there are a series of questions for each of the above headings. Most of these can be answered by ticking the appropriate boxes, however, some will require further clarification within the free text area. Providing relevant information can assist in reducing costly mistakes and ensure that the system is fit for purpose. The references mentioned in the first column will lead to further detailed guidance on each requirement.

The example of a technical site assessment diagram below, will be referred to in the guidance.

TECHNICAL SITE ASSESSMENT – SITE PLAN

Cam 1 Location: PTZ camera to cover junction of Crow Road and Ancaster Drive
Target speed: Variable
Activity: Car crime and Criminal Damage
Purpose of observation: Recognise 50%
Cam View: View of both Crow Road and Ancaster Drive
Cam Make and model: (To be completed)
Cam Lens: (To be completed)
Lux: (To be completed)
Cam Mounting: (To be completed)
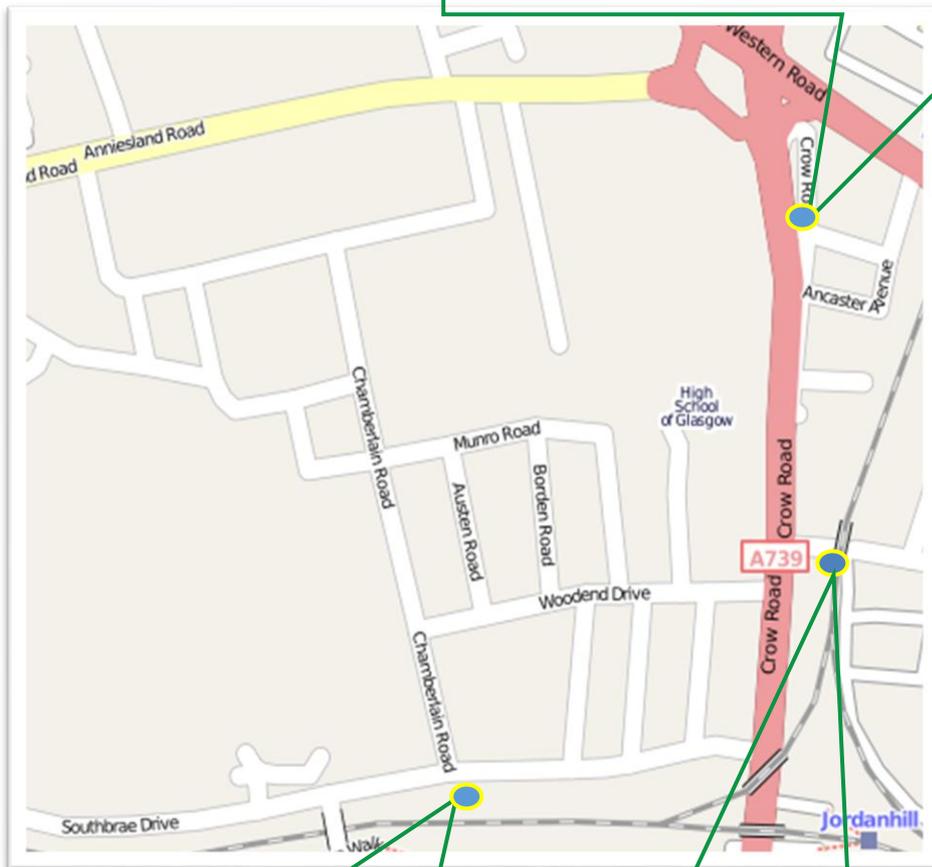
Cam 2 Location: PTZ camera to cover junction of Southbrae Drive and Chamberlain Road.
Target speed: Variable
Activity: Theft, Assault, Violent crime and ASB
Purpose of observation: Identification 100%
Cam View: zoomed view of both Southbrae Drive and Chamberlain Road
Cam Make and model: (To be completed)
Cam Lens: (To be completed)
Lux: (To be completed)
Cam Mounting: (To be completed)

Cam 3 Location: Static Dome Camera Platform one of railway station. (view to south of station towards entrance)
Target speed: Variable
Activity: Theft, Assault, Violent crime and ASB
Purpose of observation: Observe/recognise 25%-50%
Cam View: view of platform one
Cam Make and model: (To be completed)
Cam Lens: (To be completed)
Lux: (To be completed)
Cam Mounting: (To be completed)

OPERATIONAL REQUIREMENTS

2.1 DEFINING THE PURPOSE OF OBSERVATION FOR EACH CAMERA LOCATION

2.1.1 Location of the camera

Surveillance Camera Codes of Practice Principles 1 and 3; BSIEC 62676-4 Sections 4.4, 5.3 to 5.16, 6.6, 6.7, 6.8, 6.9, 6.11.1 and 6.11.2.

What location do you want to observe? Divide your site plan into specific areas and focus on the problems within each section. Pinpoint each problem and be clear about the views required. (See purpose of observation below). There may be more than one problem so make sure each one is defined. Remember also to identify physical boundaries and limitations of the area e.g. buildings, bends in road, trees etc. During completion of Stage 1 an 'Initial site assessment plan' should have been completed and this will assist with populating this 'technical site assessment plan'. Please see the above example of how to complete a site assessment.

> Entrance to A Block
> Entrance to D Block
> Reception
> Back of Music & Sports Blocks
> Lunchtime queues & atrium
> PE corridor
> Outside L Block
> Outside Science (GG2/3 Doors)
> Outisde FG6
> Lay chaplain & chapel entrance/exit

2.1.2 Threat or activity to be observed

Surveillance Camera Codes of Practice Principle 1; BSIEC 62676-4 Sections 5.3.5, 6.6 and 9.2

What potential or actual threat/activity do you wish to observe? Refer to your problem analysis and your 'Initial Site assessment' to assist with identifying the activity. Specify the activity to be observed.

- ☐ Theft/Shoplifting
- ☐ Robbery
- ☒ Anti-Social Behaviour
- ☐ Traffic offences
- ☐ Flow of customers/crowds
- ☐ Unauthorised person(s)
- ☐ Other (please specify):

> Safeguarding concerns including unruly student behaviour/bullying. Gathering of students/intimidation.

2.1.3 What time of day, type and how often does the specified activity occur?
Please specify for example: 'every weekday, evenings'. For example:

- Theft, assault violent crime and anti social behaviour. Friday and Saturday during the evening
- Anti-social behaviour most evenings

> Every weekday during school hours, prior to school starting, throughout break, lunch and lesson changeover in the afterrnoon and as school finishes.

2.1.4 Purpose of observation

Surveillance Camera Codes of Practice Principles 1, 3.2.4, 12; BS EN 62676-4 Sections 5.3.6, 6.7, 6.8, 6.9 also 13.3.2.6 to 13.3.2.11

There are 4 generally used categories for describing the purpose of observation with a surveillance camera. These are: Identify, Recognise, Observe and Detect. These 4 categories are part of the industry standards which are set out in BS EN 62676-4 2015. Essentially, these categories relate to the size of an image on screen. Examples of these categories can be found in **Appendix 1**. There are 2 more categories, Inspect and Monitor, which are not generally used.

Which of the categories of image do you require at each of your camera sites?

> Recognise and Observe

Please specify which of the four categories are appropriate. Remember there may be more than one purpose for each location and so different image requirements may apply:

☐ **Detect** – to detect the existence or presence of a person
☒ **Observe** – to allow for general observation but not to the extent of being able to recognise a person
☒ **Recognise** – to recognise somebody you know, or determine that somebody is not known to you
☐ **Identify** – to identify an unknown person beyond reasonable doubt

Please specify any other equipment/technology you intend to use e.g. body worn cameras, drone mounted cameras, automatic number plate recognition software, facial recognition software, image analysis, etc.

> N/A

2.1.5 Target speed

BS EN 62676-4 Sections 5.3.5

How fast will the target be moving? This information is important to enable the appropriate frame-rate to be set for recording and viewing the camera footage. For example, some surveillance camera systems record in 'time-lapse' mode (to reduce the amounts of storage required), with only a certain number of frames per second. A low frame rate may be adequate if monitoring a long exit-less corridor, but a higher frame rate will be necessary if monitoring a busy street or doorway which people pass through frequently.

☐ Static
☒ Person
☐ Vehicle moving
☐ To be monitored only in response to an alarm trigger
☐ Other (Please specify)

> Persons will ordinarily be walking through these zones.

2.2 OPERATIONAL ISSUES

2.2.1 Who monitors

Surveillance Camera Codes of Practice Principles 4, 5, 8 and 11; BS 7958 Management and operation of CCTV Sections 4.4, 5.0, 7.0, 8.0 and 9.0; BS EN 62676-4 Section 5.3.10, 5.3.12, 5.3.14 SCC Principle 4 and 5; BS 7858 Screening of individuals employed in a security environment

Which of the following indicates how the system will be monitored? The question of 'Who monitors' varies on the type of monitoring required, based on the purposes and extent of the surveillance system. Reference should be made to the previous and following Stages to assist with answering this question. Please specify one or more of the following.

☐ Proactive system which uses live monitoring to deter or to predict and manage events in real time

☒ Reactive system which uses live monitoring to respond after an event has begun or to provide post incident evidence

☐ No live monitoring with recording for post event review and investigation only

☐ Other (Please specify)

2.2.2 Who will monitor the system?

☒ Dedicated personnel whose sole responsibility is to operate the system and respond to events

☒ Casual operation by personnel, as a secondary function to their main role, such as a receptionist, or operators who have several roles

☐ Other (please specify) e.g. No monitoring, just for post event review

The site security warden and reception office have live access to the cameras. Any footage that is requested via officail channels must be approved by SLT and only two senior members of the IT team have this access ability.

2.2.3 If the system is monitored have you considered the following?

☒ What training will system users and associated staff require?

☐ Will system users and associated staff require licensing by the Security Industry Authority (SIA)?

☐ Will system users and associated staff require security screening?

Please provide more details of the above (e.g. SIA public space surveillance licenses are not required because system users are employed by the operator to monitor own system with no third party contractual arrangements. All system users will, however, receive training in all associated aspects of role).

2.2.4 When the system will be monitored

Surveillance Camera Codes of Practice Principle 3; BS EN 62676-4 Section 5.3.7

What hours during the day and what days of the week is monitoring required? Please define operating hours of the system based upon defined purposes and risk assessment.

System will operate 24/7, however live monitoring only taeks place during school opening hourse Monday - Friday. Any footage deemed necessary outside these hours can be obtained via the official internal request procedure.

2.2.5 Where the system will be monitored

Surveillance Camera Codes of Practice Principle 8; BS EN 62676-4 Section 12; BS 7958 Sections 6.1, 6.2 and 6.3

Where will the monitoring take place? Once again there are a variety of locations where a surveillance system may be monitored. These can range from an off-site arrangement which is monitored under contract by a third party, or an area set aside for *ad hoc* monitoring, through to a purpose-built control room with the latest technology. If it is the latter option, good design informed by recommended standards for control rooms is fundamental to ensuring the effectiveness of your system.

☐ Private security premises
☐ Police control room
☐ Local Authority control room
☒ Other (please specify)

Internal CCTV system is monitored locally on school site by key personnel

Which standards apply? If the monitoring is to be undertaken in a designated control room and it complies with the following please tick as appropriate.

☐ BS 62676-4
☐ BS 7958
☐ Other relevant standards (please specify)

N/A

2.2.6 Proactive response

Surveillance Camera Codes of Practice Principle 4 and 11; BS EN 62676-4 Sections 5.3.13 and 5.4.4; BS7958 Section 7

Which of the following is covered in a response policy? Research indicates that the effectiveness of proactive surveillance camera systems is linked to the capacity, capability and local knowledge of the operating staff and this will include the appropriate response actions.

☐ Clear responsibility for deciding when a response is required
☐ The types of responses and actions by the operator for each potential occurrence
☒ Who to contact in relation to the type of occurrence
☐ Any appropriate target times for each type of response
☐ Results of any responses made/not made
☐ Are appropriate operators and staff trained/ due to be trained regarding expected responses
☐ Other (please specify)

2.3 SYSTEM REQUIREMENTS

2.3.1 Alert functions

BS EN 62676-4 Section 5.4.2, 5.4.3 and 12

What action should the system take when an event is detected? Some systems are designed to activate a recording and/or alert an operator when a particular movement or activity is detected, such as intruders in unauthorised areas. In addition the event may be detected by the system itself if it has an in build video motion-detection (VMD) capability or Video based Detection system (VBDS) also known as 'Intelligent Video'. A decision should be made regarding what type of activity needs to trigger an alert and then what form that alert should take. Please tick below where appropriate.

☐ Display the view from the camera to a monitor in front of operator. The monitor could remain blank and be activated only when an event is detected

☐ Visual alarms such as a flashing light that pinpoints the location of the event on a plan

☐ Audible simple auditable alarm

☐ Text message or image sent to a key holder

☐ Emergency relay – sent to local police station

☐ Record event data – records only when motion detected

☒ No Alert Function required

☐ Other (please specify)

> System records 24x7 and footage is subsequently trawled for any particualr incident

2.3.2 Display

BS EN 62676-4 Section 7 and 12

How will the images be viewed? The number of display screens and configuration of the image display screens will depend on the activities you wish to detect, the available space and the size of the hardware. It may be the case that one display is split to show the view of several cameras, or sequencing the views, however, there are compromises with both options. Displays are getting larger and cheaper, so size will be partly a financial decision and partly dependent on the space available. It is advisable to seek advice regarding the options but first consider the following points:

☐ Number of camera views that require constant monitoring	16
☐ Number of cameras to be monitored	16
☐ Category of observation (as per 'initial site assessment')	Safeguarding and Behaviour Management
☐ Separate display (or viewing area) for reviewing recorded material	Yes
☐ Type of display – LCD, Plasma (if other, please specify)	LCD
☐ Positioning of cameras (produce map if not already completed in initial site assessment)	Map completed for internal use
☐ Other (please specify and where possible enter requirements from above answers in this section)	

2.3.3 Recording

Surveillance Camera Codes of Practice Principles 5 and 6; BS EN 62676-4 Sections 5.3.5, Definition of Activity (speed of target) 5.3.10 (Monitoring and image storage), 9.2 (Frame Rate), 10 (Storage characteristics), 11.1 (Image Storage and export) and Annex A (Current Video Standard formats), Annex D (Guide to specifying VSS parameters, Annex C (Test method of image quality), 11.3 (Basic Metadata); BS EN 62676 -1-1 Section 6.1.3.6

If digital recording is to be purchased, have you considered the following? Most new surveillance camera systems rely on digital recording technology and record onto a hard drive, similar to a standard computer. The drive has a finite storage capacity so a digital recorder operating continuously can only retain images on the system for a set period before it is overwritten. There is a growing interest in the use of cloud storage solutions for surveillance camera systems. Cloud storage may bring some benefits, yet it will introduce cyber security risks so if you contract out your storage with a cloud provider you will need to ensure that they can assure the security of your data. Once again, it may assist you to obtain advice on the options available. While the following is not inclusive, it will assist in determining the storage requirements of your system.

☒ Retention period – this will vary due to the intended purpose for which images have been captured.	30 days
☐ Image quality – some digital recording can compress the images when saving them and this may reduce the quality when playback is used.	MP4
☐ Frame rate – use an appropriate frame rate for each camera based on activity you want to capture. High speed or complex scene requires higher frame rate.	
☐ Metadata – is text data you want to record alongside video images so decide what you require, this is usually, time and date, camera number and location.	Date & Time alomng with Camera & Location
☐ Other (please specify)	

2.3.4 Export, access and archiving

Surveillance Camera Code of Practice Principles 7 and 9 and 11; BS EN62676-4 Sections 5.3.11 (Exporting images), 11.6 (Image Export) and 11.7 (Replay of exported images); BS7958 Section 8 (Privacy and Disclosure issues) and 9 (Recorded material management)

The digital recorder should provide a means of creating a high-quality record of an event or incident, which can then be used as evidence in any subsequent investigation. With digital systems incidents are copied from the hard drive or from cloud storage to a storage device e.g. external hard drives, memory sticks etc. prior to it being overwritten or deleted.

The system needs to be equipped with a suitable export facility. A DVD writer/flash memory drive could suffice for short clips. Longer video clips might need other export methods e.g. USB drive, network port or removable hard drive. If the exported video sequence is a non-standard format the manufacturers must provide additional software so that video can be replayed and viewed on a standard computer/tablet etc. Operating procedures should be in place to provide details as to who can access the control room and view footage and this must be strictly limited.

How do you want to export data from the system to create a permanent record?
e.g. from internal hard drive or cloud storage to external hard drive, memory stick etc.

Any required footage for an incident is exported to MP4 either to a local network share or if being provided to an agency (Police) this will be shared as necessary.

If non-standard format, how will the video be replayed by those needing to view images?
e.g. manufacturer's software

N/A

Who will require access to the data? e.g. police, etc.

Hagley Catholic High School Key personnel (SLT/Operations Team) and potentially Police

What procedures are in place to cover the export of images, access to images and archiving?

Internal CCTV Policy and CCTV Access Request forms

How do your procedures for export of images, access to images and archiving guard against cyber security risks?

Only two senior IT personnel have access to the camera software and this is password protected. The software is only installed on two seperate devices within the school. The system is not configured to be accessed externally.

2.4   ENGINEERING ISSUES

2.4.1 Engineering issues

Surveillance Camera Codes of Practice Principle 2; BS EN 62676-4 Sections 6.8 (Field of view-other considerations), 8 Transmission; BS EN 62676-1-2 System Requirements; BS EN 62676 -2-1 Video transmission protocols – General requirements

What type of engineering/ transmission is required? Consideration must be given to the transmission of the video signal from one location to another. There is an increasing array of options and more thought now needs to be given to the choice of transmission method. Those tasked with the transmission specification need to be able to understand the implications of choosing one method over another and both the physical and financial constraints of the intended surveillance camera system need to be considered. In addition to all the other engineering considerations the placement of the cameras is vital, as if the camera is positioned poorly then all the effort may be wasted. When specifying the camera placement, the points below (while not being exhaustive) should be considered.

Cameras are connected via CAT5/6 cabling which deliver footage back to the centrally storred NVR.

What is the required field of view? Camera placement should be based on achieving the optimum view not ease of installation.

Typically a 90 degree view angle

What lighting is there, including shadowing, lux levels and obstructions (e.g. street furniture)?

Perimeter lighting around the site and motion sensored spotlights in certain areas

What should be the height of equipment from the ground to obtain required view (e.g. identification) but high enough to deter vandalism?

All cameras are installed at a minimum height over 7ft from the floor for optimum viewing and to deter vandalism

What is the direction of the sun?

Depedant upon camera lcoation and time of day!

Do cameras need to be installed on private or public property? If so have the relevant permissions/wayleaves, access to power been granted?

Private property only

Will camera images be restricted so as to view only areas subject to the purposes of the system and not include private areas? (see the Privacy Impact assessment in Stage 1)

Yes

What environmental factors are there? e.g. things that can obscure views of cameras for instance trees, bushes other foliage, street furniture

Bushes and foliage around the site may impact some shots but these are limited

What access to power supplies and cabling routes will there be?

Majority of power is provided via POE and cabling is usually contained indoor where feasible and within relevant trunking

Any other engineering requirements:

None

2.5 MAINTENANCE

2.5.1 Maintenance

Surveillance Camera Codes of Practice Principle 4; BS EN 62676-4 Section 17; BS 7958 Section 9 (Recorded material management)

Any system will deteriorate without ongoing maintenance. A failure to specify maintenance schedules is one of the most common mistakes made when an operational requirement is developed. If image quality declines because of poor maintenance, perhaps a failure to clean lenses regularly, those images will no longer be fit for meeting your stated purposes. Consider what regular maintenance is necessary prior to installation and to ensure these requirements are scheduled into your procedures, they should be specified in any associated contracts. The requirements for maintenance should be undertaken by trained and qualified staff.

What regular maintenance is required *and* who is responsible for ongoing maintenance tasks?
When considering maintenance, the points below (while not being exhaustive) should be considered.

☐ Cleaning the equipment	St Nicholas Owen Catholic Multi Academy IT Support Team
☐ Repairs or replacing faulty equipment (an acceptable turnaround time from report to repair should be specified in any contract)	St Nicholas Owen Catholic Multi Academy IT Support Team or outosurced to trusted suppliers
☐ Fitness for purpose checks (include who performs them, and what activities are undertaken)	St Nicholas Owen Catholic Multi Academy IT Support Team with all queries to DPO

☐ Maintaining camera positions and focus

St Nicholas Owen Catholic Multi Academy IT Support Team

☐ Upgrades (the expected working life of the equipment should be known and planned for)

St Nicholas Owen Catholic Multi Academy IT Support Team

☐ Equipment warranties

St Nicholas Owen Catholic Multi Academy IT Support Team

☐ Are cameras placed in accessible locations to allow for ease of maintenance work?

Mostly

☐ Other comments (please specify)

APPENDIX 1 – PURPOSE OF OBSERVATION

There are 4 generally used categories: Identify, Recognise, Observe and Detect.

Category	Identify	Recognise	Observe	Detect
Purpose	Sufficient to identify an unknown person	Sufficient to recognise a known person	Sufficient for general observation but not recognise a person	Sufficient for detection system to pick up
Technically this is at least:	4 mm per pixel or 250 pixels per metre or 100% of the available screen height or 40% Full HD screen height	8 mm per pixel or 125 pixels per metre or 50% of the available screen height or 20% Full HD screen height	16 mm per pixel or 62.5 pixels per metre or 25% of the available screen height or 10% Full HD screen height	40 mm per pixel or 25 pixels per metre or 10% of the available screen height or 10% Full HD screen height

These 4 categories are part of the industry standards which are set out in BS EN 62726-4 2015. We have only illustrated the 4 categories which are usually required as part of a surveillance camera system. There are 2 more, which are not generally used:

Inspect has an image 4 times the size of Identify, and is usually required only where automatic facial recognition is part of the operational requirement

Monitor has an image size half as big as that in Detect, which is more likely to be specified in practice