

## **TEMPLATE**

# **NCP 104.3 - System Design Specification (including Risk Assessment, Site Survey and User Requirement)**

All clause numbers refer to NCP 104.

A simplified version of the System Design Specification (SDS) may be provided to the customer as part of the quote process. At a minimum this must include details from the following clauses in the User Requirements; Basic objectives (Clause 6.1), Surveillance areas (Clause 6.2), Activities to be captured (Clause 6.3), System and image performance (Clause 6.4), Operational periods (Clause 6.5).

## **Document control**

Specification reference, issue number, date, author, details of reference documents (for example, risk assessments, user requirements, survey documents).

## **Proposed location**

Customer, address, contact details, etc.

## **Risk assessment – (Clause 4)**

### **Targets (Clause 4.1.1), Location (Clause 4.1.2), Occupancy (Clause 4.1.3)**

*Where the risk assessment has been developed by another organisation, the SDS should refer to this document.*

The risk assessment must include details of the targets and risks, location of activity and period(s) over which these threats exist.

*Details of the risk assessment can be included in the site survey (see Clause 5).*

## **Site survey – (Clause 5)**

*Where the site survey has been carried out by another organisation, the SDS should refer to this document.*

At a minimum, the site survey must include surveyor's notes that describe; the layout of the building, the risk/target areas, potential locations for cameras, illumination, recording equipment, etc., the availability of power, communications and access and any environmental concerns.

Where the risk assessment is being carried out as part of the site survey, the survey documentation must also include details of the premises occupancy.

Where it is not possible to visit the location, e.g., the premises has not been built/completed, there must be a statement detailing the information provided by the customer/representative which was used to prepare the SDS.

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*The site survey could be an outline statement in the main body of the SDS with the details required by Clauses 5 and 7.2 placed in an Appendix.*

## **User requirement – (Clause 6)**

*Where the user requirements document has been developed by someone else, you should validate your understanding of the requirements with the user. The SDS should refer to this document.*

When developing the user requirement, the following areas, which are necessary to the design of the system, must be covered:

*Where the user requirement is to be included in the SDS, this information can be included in the preamble to that document.*

### **Basic objectives (Clause 6.1), Surveillance areas (Clause 6.2), Activities to be captured (Clause 6.3), System and image performance (Clause 6.4), Operational periods (Clause 6.5)**

Why is the system being installed and what is the deployment of the system is expected to achieve, what/who do you want to capture images of and in what detail, when do you want to capture images, what messages and alarms do you need and what will you do with the images?

### **Environmental conditions (Clause 6.6)**

What are the prevailing weather conditions, type of location (urban, rural, etc.), existing illumination, access conditions and obstructions?

### **Resilience (Clause 6.7)**

What are the requirements to protect against vandalism, tamper, unauthorised access to system software/hardware, loss of power and communications?

### **Monitoring, record and store (Clause 6.8) Export (Clause 6.9), Operational response (Clause 6.10 - can be omitted if not required), Operator requirements (Clause 6.11 - includes display requirements for users managing data), Training (Clause 6.12)**

Where is the system monitored, when is the system monitored, who monitors and manages the system, what images are monitored and what images are recorded, for how long are images retained, what format will the video be exported in, what operational response is required, what training is required?

### **System expansion and integration (Clause 6.13)**

What requirements are there to extend the coverage of the system or integrate inputs and outputs into other systems?

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## Audio (Clause 6.14)

What requirements are there to record, broadcast or use audio in an interactive way?

*Where audio is recorded, the provisions of the Data Protection Act may apply and suitable signage should be displayed by the user.*

## Limitations of surveillance (Clause 6.15)

What legal issues exist that may affect the installation and operation of the system?

There may be stock phrases to cover these requirements.

*The need to consider the application of the Data Protection Act (General Data Protection Regulations) to the system design (Privacy Impact Assessment to be carried out by the system owner and requirements for masking) and make the system owner aware they may be subject to the Data Protection Act*

*The need to make anyone entering or adjacent to the property aware that images are being gathered and for what purpose, by using appropriate signage.*

*Relevant authorities should be made aware they are subject to the Protection of Freedoms Act.*

*Designs affecting the external areas of the property are subject to the Town and Country Planning Act, which limits how many and where cameras can be located on the outside of a property, and the Clean Neighbourhoods and Environment Act which provides for local authorities to enforce restrictions on sources of lighting or noise pollution.*

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## Proposal

***For many systems, once the risk assessment, site survey and user requirement documentation are completed, it should be possible to provide an estimated cost for the system in terms of equipment to be provided, likely timescales for the work to be completed and services to be provided by the security company and/or by the customer.***

***Should the proposal be accepted then a full SDS should be provided.***

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## System Design Specification (Clause 7)

You must fully document the System Design Specification (SDS).

*The SDS should detail all services and system components to be provided to the customer and describe how the system will be configured to meet the UR.*

*The SDS should also detail all services that will be required to be provided by the customer and state any assumptions or previous customer agreements on the use of existing infrastructure, such as illumination, cabling, power distribution, and so on.*

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General statements about legal requirements, including the requirement for signage (if provided) and defined data retention periods, must be included in the preamble to the SDS.

*The DPA/GDPR will apply to all commercial systems and any domestic systems that overlook public or other private property that is not owned by the customer.*

*Signage need not be displayed as long as the owner/operator of the system is obvious; for example, cameras on a domestic property are in all probability owned and operated by the householder and therefore signage may not be required. However, this may not always be the case in some domestic and most commercial properties and, where there may be doubt as to who the owner/operator is, the system owner must ensure signage is displayed.*

General statements referring to system expansion and integration may be included.

*The preamble may also include a general description of system stating; operational period, information retention periods, number and type of cameras, illumination (ambient and/or additional), detectors and what they activate, the means to monitor and manage the system, internal and external communications provisions and power requirements. The outline description could also include details of any global parameters such as capture rate (fps), resolution, compression, export formats and tamper/vandalism protection.*

*Where information is not included in the preamble it should be stated in the appropriate section of the SDS.*

## **Site plan (Clause 7.2)**

*This may be an extension to the information gathered in Clause 5.*

Details in the site plan must include; risk areas and targets, location and field of view of cameras, maximum distance between camera and target, location, range and coverage of detectors, illumination (may be a statement about use of ambient lighting) and location of control equipment (monitor and record).

*The site plan may be a line diagram or a marked up photographic representation of the proposed location(s) detailing the required information as either graphics or as a written description.*

*The site plan may be included as an Appendix to the SDS.*

## **Camera equipment (Clause 7.3), Functional cameras (Clause 7.4), Equipment housings (Clause 7.5), Field of view/object size (Clause 7.6)**

*Details of the cameras selected for each location should include:*

- *Camera details (manufacturer, model, lens, sensitivity).*
- *Position of camera (can be a reference to the site plan).*
- *Description of target area including field of view or reference to site plan. For functional cameras, the coverage of the home location and any additional pre-set positions should be treated as individual camera views and should be described or referenced to the site plan.*
- *Image category to be stated.*

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- Statement or reference to site plan of maximum distance that the image category is to be captured at; i.e., maximum target distance identified in UR.
- Additional requirements concerning equipment housings, which are not standard to the camera supplied.

Protection against tamper and/or vandalism can be included.

## Detectors, video analysis, triggers, alerts and thermal imaging (Clause 7.7)

Detector positioning and coverage should be stated or referenced in the site plan.

Cause and effect of triggers and alerts generated by detectors or video analysis should be stated (these may be included as a separate list or if associated with a system component be included in the description of that item).

Protection against tamper and/or vandalism can be included.

## Illumination (Clause 7.8)

The following information should be included:

- The source(s) of illumination for each camera if not a global parameter (see clause 7).
- Additional illumination where required should be detailed for each camera.

Initiation of switched illumination by detectors and protection against tamper and/or vandalism may be included.

## Video/audio performance (Clause 7.9), Video frame rate (Clause 7.10) Video resolution (Clause 7.11)

Details of image capture requirements should include:

- Video recorder manufacturer and model.  
User instructions should be retained by the installer and passed as either a hard copy or soft copy to the customer.
- Video format, if not included as part of the camera specification (see clause 7.3) or global configuration (see Clause 7).
- Capture rate (fps), if not included as part of the camera specification (see Clause 7.3) or global configuration (see Clause 7).
- Video resolution, if not included as part of the camera specification (see Clause 7.3) or global configuration (see Clause 7).

## Storage (Clause 7.12), Data compression (Clause 7.13), Encryption (Clause 7.14), Metadata (Clause 7.15), Image enhancements (Clause 7.16)

Storage calculations are, at best, educated guesses because of the various options (level of quality) and contributory factors (frame activity) that affect the frame size, especially when using H.264 or H.265 compressions.

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Where possible, use the NVR/DVR manufacturer's guidance and calculations to assess the likely storage requirements and add sufficient capacity to account for likely expansion and the possibility that there may be a requirement to increase image quality or frame rates for particular cameras.

Details of the following data management requirements should be included:

- Evidence of the calculations or assumptions made for the estimate of storage requirements.
- Additional storage requirements (for example, to enable additional video to be recorded, to add redundancy or to allow back up of evidential footage).
- The minimum requirements for metadata and any additional requirements for metadata identified in the UR.

Additional data compression should not be introduced unless this has been identified as a requirement in the UR. Where this is a requirement, the means to achieve this should be identified.

Where image enhancement capabilities are included, either as part of a standard package or as a requirement of the UR, details should be stated.

## Image export (Clause 7.17)

Image export requirements should include the following information:

- Export format.
- Export media types.

## Displays (Clause 7.18)

Display requirements should include the following for each monitor:

- Display manufacturer and model.  
User instructions should be retained by the installer and passed as either a hard copy or soft copy to the customer.
- Video display resolution (system default).
- Default images displayed.  
State where this may be configured by the user.

You should provide displays that are compatible with the video aspect ratio (4:3, 16:9, and so on) to ensure images are not distorted or cropped.

## Network and transmission equipment (Clause 7.19), Network security (Clause 7.20)

Network equipment includes IP cameras, switches, routers, firewalls, network termination equipment, external digital and analogue interfaces, PoE injectors and splitters and cabling providing connectivity to/from the video management equipment as part of an internal network and/or as part of the connectivity to an external communications service provider or network.

The system designer should select or advise the customer of the most suitable internal (LAN) and external (WAN) communications infrastructure.

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Network requirements including protocols and interfaces to be used by the installer/required to be provided by the customer and estimated maximum throughput requirements for all external connectivity and shared networks must be stated.

The following must be retained by the installer and may be provided to the customer:

- A cross-reference chart or running out diagram showing the relationship between cables and devices.

System access and authentication controls must be implemented to reduce the likelihood of unauthorised users gaining access to any of the network applications or operating systems.

*Access levels should be agreed with the customer.*

There must be a written agreement with the customer where the installing company is to retain access to the system after handover and how, why and when they will access the system.

### **Tamper (Clause 7.21), Backup power supplies (Clause 7.22)**

*Tamper, anti-vandalism and backup power supply requirements should be described in either a separate section, as part of the section covering the component they are protecting or in the outline description of the system (Clause 7).*

### **System integration (Clause 7.23)**

*Where the video system integrates into external video, audio or control systems the interfaces and cause and effect should be stated (this information may be included as part of the site plan or network diagram).*

*Where other resources are shared, such as equipment rooms, power supplies, cabling, physical structures (towers and masts) and containment, risks to the effectiveness of the system should be assessed and either mitigated by design or be identified to the customer.*

### **Audio (Clause 7.24)**

*Details of audio systems should be described.*

### **Control rooms (Clause 7.25), Operator workstations (Clause 7.26)**

*A control room can be a single workstation if there is requirement to view and/or review video and/or carry out system management tasks).*

*Details of the functionality of operator workstations should be stated including, but not limited to, the ability to control cameras, switch matrix and monitor and manage video information.*

*Where there is a requirement for a purpose built CCTV control room, the specification should include details of all operator workstations, displays and ancillary equipment.*

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## **Cabling (Clause 7.27), Supporting structures (Clause 7.28)**

*The SDS should state the type(s) of cable to be installed and identify any existing cable that will be utilised.*

*Requirements for new ducts, trunking or conduit should be stated and where appropriate identify where existing containment will be used.*

*Details of support structures required for the installation of system components including, but not limited to, cameras, illumination, detectors and cabling should be stated.*

*Where existing support structures are to be used these should be identified in the SDS.*

*This information may be included in the appropriate component section of the SDS.*

## **Training (Clause 7.29)**

Details of the training and training documentation the customer will be provided as part of the installation contract must be stated.

## **Maintenance (Clause 7.30)**

An assessment of periodic maintenance requirements, based on installer and manufacturers' recommendations and environmental conditions, must be carried out to enable details of periodic maintenance activities to be provided to the customer.

This assessment must include details of any periodic software or firmware updates to components, operating systems or applications or any requirement to manage licenses.

*Responsibilities for the maintenance of additional illumination sources should be stated.*

## **Installation (Clause 8)**

*The SDS should detail the works that will be carried out and the work the customer is responsible for.*

*The SDS should detail what services (power, communications, air-conditioning, etc.) will be provided and what the customer will provide.*

## **Test, Commission and Handover (Clause 9)**

A test plan must be developed to demonstrate to the customer that the system meets the UR.

*The test plan may be included in the SDS.*

*Details of documentation to be provided to the customer at handover can be included in the SDS.*

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## **Appendix for site survey, site plan and network diagrams/running out list**

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