

Central Bedfordshire Council

SUSTAINABLE COMMUNITIES OVERVIEW & SCRUTINY COMMITTEE

Thursday, 16 March 2017

CCTV Review

Report of Executive Member for Community Services
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This report relates to the key issues

Purpose of this report

1. The report sets out proposals and recommendations for the future of Central Bedfordshire Councils public space CCTV system.

RECOMMENDATIONS

The Committee is asked to:

1. Consider the report and support the recommendation that:

The Council invests in a new multi-functional CCTV control room at Priory House, procures new HD cameras utilising wireless technology to improve image quality and reduce signal transmission costs, whilst also offering other complimentary services to generate whole Council efficiencies and increase income

Overview and Scrutiny Comments/Recommendations

1. The item is being considered by Overview and Scrutiny Committee on 16 March 2017.
2. **Context**
 - 2.1 The Council's Public Space Surveillance CCTV provision includes 129 cameras operating and monitored from the control room based at Watling House, Dunstable.
 - 2.2 The 129 cameras (both fixed and re-deployable) include those operated and monitored on behalf of town councils and other third

parties and there are also 10 cameras monitored around the Watling House offices.

- 2.3 A further 19 cameras are recorded locally at the Leighton Buzzard Multi-Storey car park. In addition 12 cameras are monitored by the Hertfordshire CCTV Partnership in Stevenage on behalf of Central Bedfordshire Council (CBC) for CBC and for Biggleswade, Sandy and Shefford Town Councils.
- 2.4 The CCTV system has developed in stages since 1995. The last significant investment in the system was prior to the formation of Central Bedfordshire Council in 2009, with some spend on camera replacements, including re-deployable cameras, and essential replacements in more recent years.
- 2.5 CCTV is monitored by 4 CCTV Operators but not on a 24/7 basis. The system does record on a 24/7 basis and live CCTV images can be forwarded by an operator to Bedfordshire Police HQ to assist the police in responding to an on-going incident.
- 2.6 The system is now at full capacity and key elements of the system are nearing the end of their useful life, with manufacturers indicating they will be withdrawing technical support from some in the near future.
- 2.7 CCTV technology has advanced considerably in recent years and these advances offer opportunities to develop the existing system to maintain the current provision and support future opportunities to develop services offered by CCTV.
- 2.8 Advances in technology also give the Council the potential to reduce its reliance on third party transmission supplied by BT/Virgin Media and migrate suitable cameras, where there is Line of Sight (LOS), to the use of wireless equipment to transmit images to the CCTV control room. Cameras that do not meet LOS criteria would remain on the BT or Virgin Media fibre optic network.
- 2.9 Discussions about the longer term future of Watling House continue and decisions about its future may well impact on the location of the CCTV control room. But in view of the end of life challenges, the decisions about the CCTV systems future need to be made outside of any timescales for decisions about Watling House.
- 2.10 CCTV acts as a 'capable guardian' both in terms of identifying disorder and criminality as well as providing evidence to support prosecution. It also supports the Council's response to safeguarding, general public safety and emergency incidents in the locations where it operates.
- 2.11 CCTV works with colleagues across the Council providing advice and a camera monitoring service. Recent collaborations include the provision in the last 18 months of CCTV for the Priory View independent living

development in Dunstable and the refurbished Household Waste Recycling Centres (HWRC) at Leighton Buzzard, Ampthill and Biggleswade.

- 2.12 Due to system capacity being at maximum and not compatible with High Definition (HD) technology, recent collaborations have utilised separate stand-alone systems (computer processors and monitors) located around the CCTV control room.
- 2.13 In May 2017 plans are in place to accept new cameras from the Thorn Turn HWRC and depot, and when built from the Council's new independent living development in Houghton Regis.
- 2.14 CCTV is fully funded by the Council and receives income from CCTV monitoring from third parties.

3.0 Consultant Review

3.1 In 2016 Global MSC Security was commissioned to examine and report on the options available to the Council to migrate the CCTV system from hard wired system using BT and Virgin fibre optic circuitry to a system:

- using wireless connectivity to link cameras together within each of the towns and for the wireless backhaul of data to the control room
- using wireless connectivity to link cameras together within each of the towns and either wireless back haul of data or use of the corporate Wireless Area Network
- consider the removal of the complete CCTV camera and control system and the associated costs.

3.2 The consultants approach was to:

- Review the as-is state, including core functions and services, staff operations, spatial requirements and relationships, and technology
- Define a broad operational vision for the Council service delivery with a view to "future proofing" affected systems and services
- Develop an architectural and technological concept for the facility whether it is retained at Watling House or moved to Priory House.

3.3 The full set of review recommendations are set out in Appendix A with the key development recommendations being:

- Migrate existing CCTV cameras to wireless transmission where this is feasible in preference to existing fibre optic cabling and reduce annual revenue costs
- Where it is possible, the CBC IT network is used for the transmission of CCTV images
- Purchase of new CCTV Command and Control software/hardware and Network Video Recorders
- Enhance the CCTV control room to provide additional services

4.0 Options for consideration

4.1 Having considered the detail of the review, current status of the CCTV system and potential changes at Watling House three options have been identified for consideration:

1. **Invest in a new multi-functional CCTV control room at Priory House, procuring new HD cameras utilising wireless technology to improve image quality and reduce signal transmission costs, whilst also offering other complimentary services to generate whole Council efficiencies and increase income**

This option proposes investing in wireless and digital transmission of CCTV images for a fully digital system. Linking cameras wirelessly using LOS technology (instead of fibre optic cable) significantly reduces signal transmission costs as there is little on-going cost in ownership e.g. the typical rental of a fibre cable for one camera per year is £1000. Wireless transmissions can be fully encrypted for network security, do not need expensive civil works i.e. digging trenches for cables, and allow for system extension quickly and with little disruption. A feasibility study by a specialist wireless network installer confirms that a majority of current camera locations would support wireless technology.

A wireless system links cameras to a hub points locally where images are stored. Potential hub locations – mostly existing Council buildings - have been identified in all the major towns where cameras are currently located.

Storing information locally allows for only data actually needed at a particular moment to be transmitted back to the control room, thereby reducing costs. Where data from the hub location cannot be sent wirelessly a single fibre optic cable with may be utilised. Alternatively, with agreement of the ICT department and

where the bandwidth demands are minimal, use could be made of the Council's own data network.

HD cameras capture significantly more detail than standard analogue cameras. Images can be magnified up to four times which has benefits when trying to confirm vehicle index numbers or identify a suspect.

New control room hardware and software creates the opportunity for a 24/7 Council CCTV Operations Centre, providing benefits and new services for a range of other users, both internal and external:

- It would allow for all of the Council's public space cameras to be centralised and monitored in one place – Council cameras in Sandy and Biggleswade are currently monitored by Hertfordshire CCTV Partnership in Stevenage
- The opportunity to consolidate and centralise other remote Council CCTV systems across the area into one control room e.g. libraries, Priory House, and some Housing facilities
- Out-of-hours call handling
- School CCTV and alarm monitoring
- Care Line vulnerable persons alarm monitoring – currently outsourced to Wealden and Eastbourne Lifeline
- Streaming of HD evidential images to police custody suites removing the need to produce DVDs and the time taken for police officers to travel to collect
- Monitoring of Council staff using Body Worn Video (BWV)

2. **Continue operating the CCTV control room without additional investment until the system reaches the end of its life and cannot be technologically supported**

The existing CCTV control room software and hardware is over 8 years old and nearing the end of its useful life. The software is no longer supported by the manufacturer as it has been superseded by newer versions, and the recording equipment is now deemed 'End of Life' and should it fail spare parts may be difficult to source although our current maintenance contactor has assured us that he would expect to be able to locate any required for the next 2 years.

The ability to grow the system by monitoring additional cameras or offering additional services is severely restricted by the age, size and inflexibility of the hardware and software. It is an analogue based system set in the context of new products and solutions that are fully digital.

Where system growth has occurred in the last 2 years it has been through the use of stand alone technology working completely independently from the main system. This lack of technological integration is very inefficient from a monitoring perspective for the CCTV operator i.e. having to view different monitors located around the control room, as well as being more costly.

3. **Cease public space CCTV monitoring, decommission the CCTV control room and remove the camera infrastructure**

The provision of public space CCTV supports the following statutory requirements:

- Crime and Disorder Act 1998 requires local authorities to do all they can to reduce crime and disorder and promote community safety
- Anti-Social Behaviour, Crime and Policing Act 2014 provides local authorities alongside the police with new tools and powers to tackle anti-social behaviour
- Environmental Protection Act 1990 creates offences in relation to waste management e.g. fly-tipping, householder duty of care for disposal of waste, and littering, for which the local authority are the enforcement body not the police

Although the removal of the Council's CCTV capability would provide a significant saving, the service commands wide public support and withdrawal of it would be detrimental to our communities' sense of safety and security.

In the last two years the service has developed its in-house camera monitoring capability e.g. Priory View and HWRCs. If the Council was not able to offer camera monitoring internally, there would be significant extra cost in finding an alternative commercial solution.

Bedfordshire Police's Chief Superintendent for Crime and Community strongly supports the continuation of CCTV as both a deterrent for potential criminals and a valuable investigative tool. The police would be opposed to the Council removing CCTV in Central Bedfordshire.

Removing the system would involve decommissioning the CCTV Control Room, removing each camera and camera column, disconnecting power supplies and fibre connections, and civil works to restore the ground to its original condition. The cost to do so is significant and once removed would be prohibitive to restore.

5.0 Costs

Estimated Capital Costs

Option	Capital cost	10% contingency	Total including contingency
1 Design and build a new CCTV Control Room at Priory House with new HD cameras utilising a mainly wireless transmission system	£640,090	£64,009	£704,099
2. Continue operating the current CCTV facility at Watling House with existing camera infrastructure	Unknown and dependent on the cost of a particular replacement part	N/A	Unknown
3. Decommission the CCTV Control Room and remove the camera infrastructure	£208,000	£20,800	£228,800

Revenue costs

Option	2016/17 CCTV net revenue budget (including salaries)	Estimated Revised net CCTV Budget (including salaries)	Potential Revenue Saving per annum
1. Fitted new Control Room at Priory House, CCTV operating hardware & software, new HD cameras , with wireless & BT transmission	£251k	£171k	£80k
2. Continue operating the current CCTV facility at Watling House with existing camera infrastructure	£251k	£251k	Nil
3. Decommission the CCTV Control Room and remove the camera infrastructure	£251k	£0	£251k

6.0 Recommendation

- 6.1 The Councils infrastructure is now at the end of its useful life and needs to be replaced. Trying to maintain the current system poses a significant risk of an unexpected catastrophic failure that we cannot make any realistic contingency plans for.
- 6.2 If replacing the system is not approved the only other possible option is for the Council to stop providing CCTV in Central Bedfordshire and begin plans for decommissioning the entire system within the next 12 to 18 months.
- 6.3 Terminating the Councils CCTV provision poses unknown risks in terms of the impact on crime and disorder, safeguarding and general community safety.
- 6.4 Investing in CCTV will deliver revenue savings, utilise more flexible technology allowing for a CCTV service to be delivered in any area across Central Bedfordshire where there is a pressing need, and open up the opportunity to develop new services leading to additional income streams which may, over time, enable the service to become self funding.

6.5 As such it is recommended that:

The Council invests in a new multi-functional CCTV control room at Priory House, procuring new HD cameras utilising wireless technology to improve image quality and reduce signal transmission costs, whilst also offering other complimentary services to generate whole Council efficiencies and increase income

7.0 Council Priorities

7.1 The proposed action will support the following Council priorities:

- Enhancing Central Bedfordshire
- Great resident services
- Protecting the vulnerable; improving wellbeing
- Creating stronger communities
- A more efficient and responsive Council

8.0 Legal Implications

8.1 The Surveillance Camera Commissioner has issued a Surveillance Camera Code of Practice under the Freedoms Act 2012. It provides guidance on the appropriate and effective use of surveillance camera systems by relevant authorities. The Council is defined as a relevant authority by Section 33 of the Act, and as such must have regard to the code when exercising any functions to which the code relates.

8.2 The stated purpose of the Surveillance Camera Code of Practice is to ensure that individuals and wider communities have confidence that surveillance cameras are deployed to protect and support them, and ensure there is no misuse or abuse. That wherever overt surveillance cameras are in a public place, the cameras are placed in pursuit of a legitimate aim, necessary to meet a pressing need, and compliant with legislation.

8.3 The code of practice sets out 12 guiding principles, creating a framework to ensure operators and users of surveillance camera systems do so in a proportionate and transparent manner, and systems are, whilst capable of providing good quality images and other information which is fit for purpose, consistent with a legitimate aim and pressing need. Any system should achieve the most appropriate balance between public protection and individual privacy. Adherence to the code significantly supports legal obligations under the Protection of Freedoms Act 2012, to protect personal data under the Data Protection Act 1998 and to adherence of Article 8 of the Human Rights Act 1998—right to respect for private and family life.

8.4 Upgrading the CCTV control room, systems and equipment can offer the opportunity for greater security and more flexibility, both in terms of

accessibility for e.g. the police and in terms of cameras being only deployed where necessary (and so can be easily withdrawn where there is no longer a necessity). However, to comply with the Code and the legislation, consideration must be given to:

- The effect any new technology has on individuals and their privacy.
- Expanding the use of a new camera system must always be for a specified purpose which is in pursuit of a legitimate aim and necessary to meet an identified pressing need.
- For the Council to retain operational, technical and competency standards, consideration should be given to updating:
 - security systems (particularly for storage of data) as any security must be accredited to a level of at least 'RESTRICTED' under the Government Protective Marking Scheme (GPMS) (which CBC currently use) as well as in accordance with guidance from the Association of Chief Police Officers,
 - protocols particularly regarding accessibility, data protection, and ensuring accuracy of systems in cross referencing data,
 - procedures (and to take account of contingencies if the new system has a problem e.g. atmospheric conditions on wireless connections can slow download speeds);
 - and training operators and officers.

It is also recommended that a Privacy Impact Assessment is completed as part of assessing what upgrades are appropriate under the Data Protection Act 1998.

8.5 One of the 12 principles of the Code concerns the effectiveness of the system i.e. “it should then be used in the most effective way to support public safety and law enforcement with the aim of processing images and information of evidential value”. Keeping an ageing system which is going to result in equipment no longer being maintained to manufacturer standards puts the Council at risk of no longer operating at a capacity to capture, process, and store images and information at a quality which is suitable for its intended purpose. If the purpose of a system includes crime prevention, detection and investigation, keeping an ineffective system also puts at risk any action taken by the police or other enforcement authorities (including the Council) because any captured images may no longer meet criminal evidence standards.

8.6 Although there is no specific law requiring a Council to have CCTV, it supports the Councils statutory duty under Section 17 of the Crime and Disorder Act 1998 to do all that it reasonably can to prevent crime and disorder in its area. CCTV is particularly useful for prevention of crime and disorder and removing CCTV may make it difficult to demonstrate the Council is doing all it reasonably can. It may also impact on the ability of the police or other enforcing bodies (including the Council) to investigate crime and, as CCTV will be seen to be withdrawn, there would be a risk that removal causes an increase in crime in the area. If it was considered by the Committee that the Council should remove all

CCTV, it is recommended that consultation is undertaken with those people affected by it, particularly members of the public, but also residents, business owners, and employees which CCTV currently covers. It would also be recommended to consult partners such as the police and housing associations. Such consultation may need to identify whether other measures can be put in place where there is a pressing need to be addressed to support prevention of crime and disorder e.g. part removal of CCTV.

9 Financial and Risk Implications

- 9.1 There is a capital budget of £200k in 2016/17 capital budget for CCTV development. £15k of this funding was used for the feasibility study. It was also agreed that £48k of the slippage for the CCTV development would be used for purchasing new car park payment machines for the Council. The remaining £137k has been flagged for slippage into 2017/18 for CCTV development.
- 9.2 A further £560k , £360k in 2017/18 and £200k in 2018/19 is included in the capital MTFP which is due to be approved subject to budget approval. An Outline Business Case has been submitted for this additional capital funding which is for further feasibility work .
- 9.3 The revenue MTFP includes an efficiency saving for CCTV which starts in 2018/19 at £100k increasing to £140k in 2020/21. The proposed development generates revenue saving estimated at £80k per year and the remaining saving will be generated through additional income streams from using it to deliver other services. Services that could potentially offer income streams:
- CareLine/Social/Community Alarms
 - Sheltered Housing response
 - Coordinating first responders
 - Floodline/Snowline
 - Car parks – barrier monitoring
 - Lone worker monitoring
 - Control of rising bollards
 - Intruder/fire alarm response
 - Out of hours call handling
 - School CCTV/Alarm monitoring
 - Environmental monitoring stations
- 9.4 Any new development would, as far as possible, be ‘future proofed’ to ensure that capital investment of £697k is maximised and it is anticipated that the system would not need any further significant investment for approximately 10 years if well maintained. The revenue expenditure savings made over a 10 year period are estimated at £800k without the addition of alternative income streams.

- 9.5 CCTV cameras with ANPR (Automatic Number Plate Recognition) capability may be utilised to support public safety and law enforcement. Potential exists for the Council, where it can be reasonably justified and subject to legal advice, use ANPR cameras to enforce decriminalised road traffic offences e.g. bus lane enforcement, HGV weight restriction, and stopping within school keep clear areas.
- 9.6 The proposal mitigates the risks of:
- Catastrophic failure of the current system, resulting in
 - Failure to deliver the Council's priorities, and
 - Failure to discharge statutory responsibilities.

10.0 Equalities Implications

- 10.1 The Council has a statutory duty to promote equality of opportunity, eliminate unlawful discrimination, harassment and victimisation and foster good relations in respect of nine protected characteristics; age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex and sexual orientation.
- 10.2 CCTV monitoring provides evidential support to potential or actual victims of hate crime in public areas, where crimes or incidents are motivated by prejudice, hostility or hatred based upon a protected characteristic. It can also provide important evidential support relating to the night time economy where there may be incidences of violent crime (a greater risk for young men) and rape and sexual assault (a greater risk for women)
- 10.3 Young people and vulnerable adults can be subject to more anti-social behaviour and crime than other members of the community. National evidence highlights that there is also an under reporting of anti-social behaviour, domestic abuse and serious acquisitive crime by vulnerable members of the community. Changes to camera numbers, and the levels of pro-active monitoring and recording, are likely to have an impact on the experience of crime. Priorities for pro-active monitoring need to take into account the safety of vulnerable groups and those at greatest risk such as taxi drivers.
- 10.4 Changes affecting Council staff including changes to shift patterns and work location, should be made in accordance with legal requirements and HR policy and procedure.

11 Implications for Work Programming

- 11.1 None noted

12 Conclusion and next Steps

- 12.1 The Council's infrastructure is now at the end of its useful life and needs to be replaced. Trying to maintain the current system poses a significant risk of catastrophic failure that we cannot make any contingency plans for.
- 12.2 If replacing the system is not approved the only other possible option is for the Council to stop providing CCTV in Central Bedfordshire and begin plans for decommissioning the entire system within the next 12 to 18 months.
- 12.3 It is recommended that the Committee supports the recommendation to invest in a new CCTV system for Central Bedfordshire Council.
- 12.4 The Committee's recommendations will be included in the CCTV report going to Executive in April 2017.

Appendices

Appendix A – Key and supplementary recommendations from Global MSC CCTV consultants

Appendix B – CCTV revenue budget 2016/17

Appendix C – Supporting information for consultants' recommendations

Background Papers

None

Appendix A

Key recommendations from Global MSC consultants

- 1** Migrate existing CCTV cameras to wireless transmission where this is feasible in preference to existing fibre optic cabling and reduce annual revenue costs
- 2** Where it is possible, the CBC IT network is used for the transmission of CCTV images
- 3** Purchase of new CCTV Command and Control software/hardware and Network Video Recorders
- 4** Enhance the CCTV Control Room to provide additional services

Supplementary recommendations from Global MSC consultants

- 5** One Director is responsible for all CCTV matters for the Council
- 6** Adopt a standard recording policy for all CCTV systems
- 7** Obtain Wayleave Agreements for 'Hub' points
- 8** Provision of remote CCTV viewing facility at Luton Police Station and Kempston Police HQ
- 9** Memorandum of Understanding between the Council and Bedfordshire Police
- 10** Third party monitoring costs of CBC and town council alarms are investigated
- 11** Traffic enforcement using CCTV is considered
- 12** CBC describes accurately in its DPA registration the use of the CCTV systems in the Council area
- 13** CBC undertakes to carry out CCTV Operational Requirements and Pressing Needs together with a Privacy Impact Assessment
- 14** CBC add sufficient signs to its camera estate

Appendix B

CCTV Revenue Budget 2016/17

Staff training	£1040
Electricity	£2500
Telephones	£1000
General expenses	£3990
Private Contractors	£178,860
Expenditure	£187,390
Income	(£98,570)
Net Operating Budget	£88,820
CCTV Staff Salaries *	£162,128
Total CCTV revenue costs	£250,948

* CCTV staff salary costs are budgeted from the Community Safety Service salary budget. There is an ongoing restructure in the Community Safety Service, which includes CCTV, and it is anticipated that salary costs will reduce by an estimated £15k.

Appendix C

Supporting information for consultant's recommendations:

Recommendation 1: Migrate existing CCTV cameras to wireless transmission where this is feasible in preference to existing fibre optic cabling and reduce annual revenue costs

Where there is LOS and it is cost effective and feasible, it is recommend that the Council adopts the alternative wireless transmission option in preference to existing fibre optic cabling and reduce its annual revenue costs.

MSC in conjunction with a specialist wireless provider UK Broadband has carried out an initial Wireless CCTV survey to determine budgetary prices for switching the cameras using BT and Virgin fibre to wireless transmission solution. Once a wireless transmission system is in place all images arriving in the Control Room will be digital/IP even if it is reliant on the use of fibre optic cabling for the long 'back-haul'. It should be noted that where there is no 'Line of Sight' (LOS) for wireless links, it would be necessary if the cameras were to continue to be transmitted and monitored, for these cameras to remain on BT or Virgin Media and revenue charges to continue to be paid.

Advantages and Disadvantages of Wireless Transmission

Wireless CCTV systems have a number of advantages and disadvantages compared to the current fibre optic transmission service from BT and Virgin Media, which are based on direct point-to-point links. It is important to understand these benefits and risks associated with the use of wireless for the transmission of CCTV images.

Advantages of Wireless

There are a number of key benefits: -

- a) Reduced cost of deployment and removal of annual rental costs from BT and Virgin Media
- b) Ability to install an IP network enabling High Definition (HD) and IP cameras
- c) Able to easily relocate whole/part system when/if requirement at that location ceases (linking into the wireless network)
- d) Extend CCTV system at various locations with fast lead times and little disruption
- e) Provide additional camera locations on existing network with little or no extra transmission costs
- f) No expensive Civil Works/duct installation which can later become redundant
- g) Little on-going cost of ownership

- h) Able to relocate Control Room and its receiving equipment 'relatively' easily without major disruption

In addition other benefits include: -

- a) Ability to offer a segregated Wi-Fi service to residents and public in camera 'hot-spots' and combine capital contributions with various departments
- b) Ability to add other "IP" connected devices such as alarm systems, PA systems, Radio Link extensions (shop/pub watch, wardens)
- c) Ability to share service and offer capacity to IT Dept.
- d) Ability to charge third parties for the provision of this transmission service

Disadvantages of Wireless

There are some issues with wireless that need to be considered when choosing to reduce transmission revenue costs: -

- a) With wireless systems cameras are linked to each other in clusters (often 'daisy-chained') where Camera 1 is linked to Cameras 2, which is linked to Cameras 3, etc. If Camera 3 has a power failure or an equipment failure, images from Camera 1 and 2 will also be lost.

The problem can be reduced by: -

- a. Building wireless 'resilient rings' (especially on the 'main trunk routes) so that one break in the wireless network does not cause loss of any camera
- b. Ensuring engineers have spare parts and are on a responsive call-out maintenance package to restore failing services reduces this risk
- b) The cost effective wireless links operate on unlicensed radio frequencies. This means that another user of wireless could, by accident or intentionally, cause interference on the camera images by using their own wireless equipment in the same area.

The problem can be reduced by: -

- a. Using directional antennas and equipment that can select between a wide-range of available frequencies reduces this risk. It can also be reduced through remote access from engineers who can login and re-tune equipment remotely if needed

- b. For critical, major trunk 'back-haul' routes, the wireless units used are generally licensed frequencies (with an annual cost) to avoid interference
- c) Latency of control can be a further disadvantage (time between move of joystick to actual movement of the camera) without careful engineering consideration
- d) Initial deployment expensive
- e) More 'in line' equipment to go wrong
- f) Line of sight (LOS) generally required
- g) Trees/foliage and scaffolding require managing and keeping under control

Wireless Security

Of course the security of any network that could be eavesdropped is very important and the Council needs to be convinced that the data in its systems will be secure and not be susceptible to cyber crime and hacking. The wireless network security is therefore of paramount importance in the selection of radio equipment and the network design.

The primary considerations are summarised below, all of which contribute to ensure the highest level of security: -

- All radio's deployed will have encryption capability that satisfy the requirements of the COAD document for Civil Traffic Enforcement, understood to be AES128 or higher
- The radios use their unique custom protocol (as distinct to a universal Wi-Fi 802.11 standard) and therefore it would require a radio of the same type to be able to eavesdrop. There are then additional levels of security within the product such as password protection and encryption to ensure those with the same units cannot access the radios.
- For radio propagation directional antenna is used and installed at rooftop level; this has the added security benefit of making it much less possible for anyone to even detect the radio signals
- If anyone were to attempt to eavesdrop the radio signal they would have to position another radio within the path – this would have the effect of causing the radio link to stop working (and therefore preventing any transmission from being detected)
- Typical product security features include:
 - AES encryption
 - Storm / flood protection
 - Password protection
 - Secure command-line access via SSH protocol

Recommendation 2: Where it is possible, the CBC IT network is used for the transmission of CCTV images

Coupled with the use of wireless transmission, the council will need to use hub points at various locations where recording of camera images will take place; these will need to be linked either to an IP circuit using the council LAN or the BT RS1000d service to enable a 'trunk' route to the control room location to enable viewing and copying.

The Councils IT Team are not confident there will be sufficient bandwidth between the routes/towns that we may require. Although we have shown the use of the Council IP network on the schematics, we have also sought prices from BT for the provision of up to 100 Mbs of bandwidth. Of course, if the Council IP network already exists and CCTV data/traffic can share the 'pipe', this will be much more cost effective than having to install new links supplied by BT which will incur on-going annual costs.

In our estimation, if we use the council's IT networks, we will need the maximum following bandwidths (if we stream all cameras and don't record locally. The actual requirement will be less than this if as intended, NVR's are situated close to the cameras and data only 'requested' and transmitted when viewing or downloading takes place.

- Houghton Regis Public Library – 70Mbps
- Leighton Buzzard Public Library (if we can establish LOS between that and the MSCP) – 30Mbps
- Sandy Public Library – 30Mbps
- Shefford Public Library – 10Mbps

The BT 100 Mbs service costs to link the hub sites will be circa £52,000 capital and £8,000 p.a. revenue costs, but does include the £17,000 capital and £2,000 revenue to link to the two police stations to enable the downloading of images by officers investigating offences. These costs are in addition to those already paid for an analogue service but which we hope to replace the majority with wireless where there is LOS. Where this LOS is not possible, even with 'hops', we will need to retain the existing fibre optic circuits which will need to be upgraded to an IP circuit if the council wishes to embrace HD camera technology.

If the Councils network cannot be used for whatever reason, the BT fibre optic service of RS1000d (100Mbps) will be used and be connected at the following sites: -

- Dunstable – Grove Theatre
- Leighton Buzzard – Multi-Storey Car Park
- Houghton Regis – Public Library
- Biggleswade – Street cabinet close to lamppost camera number 526

- Sandy – Public Library
- Shefford – Public Library

Clearly, if the Council network can be used where this is available close to the CCTV recording and 'hub' points, it will support and complement the use of the cameras without duplicating transmission paths and capital and revenue costs.

It is recommended that the Council investigates its network bandwidth capacity and where, with an agreed Quality of Service (QoS) it is possible to transmit CCTV images, this network is adopted in preference to purchasing third party data circuits.

Recommendation 3: Purchase of new CCTV Command and Control software/hardware and Network Video Recorders

The existing CCTV control software solution is a 7-year old Synectics Control and Digital Recording Systems installed at Dunstable. The mixture of Analogue Matrix Switching Digital Recording and Synergy Pro graphical user 'front end' (controller interface/GUI) provide the main technical 'building blocks' to the integrated CCTV solution. The systems' hardware and software are nearing the end of life; some of the functionality aspects of the Synectics equipment is no longer supported, such as with some Microsoft products. The existing Synectics Synergy Pro software is version is no longer produced and has been superseded by Synergy 3, which continues to be developed with additional, functionality. It is also important to understand that this Synectics recording equipment is now End of Life and should it fail, spare parts may not be available to repair the system.

The Council does not necessarily need to adopt the Synectics software and recording option with the future upgrade of system. It will be up to the shortlisted integrators/installers to propose a solution based on the councils' operational requirements and to propose a software and recording platform that meets the council's needs.

We are proposing that the recording of CCTV data from each of the cameras is carried out remotely in order that images are not sent to the control room if they are not to be viewed or copied. There will be restrictions due to the bandwidth capacity on how many simultaneous camera streams can be transmitted to the control room but in our experience, not all cameras need to be viewed at the same time; some are used more during daylight hours for dealing with incidents such as following shoplifting offenders and others during the hours of darkness which generally might be dealing with public disorder incidents.

We are also be proposing that where possible, the control room will be fitted with display wall drivers, which will make it easier for one operator to control what is displayed on the video wall in front of them and this can

be changed by just one click of the mouse on the Graphic User Interface (GUI).

We are also proposing to record images for all cameras in 'real-time' of 25 images per second (ips). Although the current recording of the PSS CCTV images on the Council system is retained for 21 days before being overwritten, due to the guidelines issued in the National CCTV Strategy this recommends a minimum of 31 days retention. This of course is subject to the council's justification that images will be kept no longer than necessary.

Recommendation 4: Enhance the CCTV Control Room to provide additional services

The upgrade of the PSS CCTV hardware/software, the migration of transmission from fibre optic cabling to wireless (with the potential 'add-on' benefit of public Wi-Fi) and the relocation of the Council CCTV control room will enable the Council to: -

- Act on better and faster management information
 - The proposed upgraded Control Centre managing many council and stakeholder CCTV systems and coordinating various responses on behalf of the Council would provide it with the opportunity to make better, quicker and faster strategic and tactical decisions by: -
 - Creating a more holistic, integrated and simplified view of the service delivery picture within the Council
 - Improving situational awareness leading to actionable insights and co-ordinated approach
 - Placing a range of information at the fingertips of decision-makers
 - Being better able to share knowledge across the councils' departments
 - Reducing costs for the installation of public Wi-Fi
- Provision and management of a coherent and efficient organisational and operational unit
 - The upgrade of systems and the management of all CCTV systems will facilitate the co-ordination of resources (including staff and hard assets)
 - Interoperability will increase efficiency
 - Peaks in operations (if CareLine is introduced), complement rather than conflict with each other enabling resources and systems to be used more efficiently
- Foster collaboration amongst stakeholders/partners, including the Bedfordshire Police and neighbouring local authorities

The co-location of other council services to any control room would create the following opportunities to improve efficiency and effectiveness for the following categories: -

Resources	Efficiency/Effectiveness
Property	<ul style="list-style-type: none"> • Rationalisation of the property portfolio/space by consolidating and co-locating operational entities
	Opportunity to:-
Technology	<ul style="list-style-type: none"> • Drive open data standards • Consolidating corporate and operational technology • Collaboration through virtual integration • Efficiency gains by leveraging emerging technology • Achieve service resilience • Install 'FOC' public Wi-Fi at a fraction of the cost
People	<ul style="list-style-type: none"> • Opportunity to optimally utilise and up-skill the staff complement

A compilation of the type of service benefit and opportunities the new, enhanced control room could offer are suggested below.

Service	Opportunities
Control/CCTV Centre	<ul style="list-style-type: none"> • Able to obtain geographic Central Bedfordshire Council-wide Public Space Surveillance CCTV images to make informed decisions from across the council area; Dunstable, Leighton Buzzard (& MSCP), Houghton Regis, Sandy, Biggleswade, Shefford, etc. • Opportunities for technology development for internal and external clients, potential income from offender tagging, GPS tracking and CareLine, 24/7 co-ordination centre, • Reduced costs for other local authority services (alarm monitoring)
Traffic	<ul style="list-style-type: none"> • Opportunity to consider the use of CCTV for Traffic Enforcement purposes • Provide traffic information for the end users via various platforms (RTPI, web, mobile, SMS)
Customer Service	<ul style="list-style-type: none"> • An enhanced "out of hours" customer service
Environment and Leisure	<ul style="list-style-type: none"> • Potential to monitor 'other' CBC CCTV systems; Traffic Depots, Waste Recycling Centres, Leisure Centres, Libraries
Body Worn Video (BWV)	<ul style="list-style-type: none"> • Potential to monitor live BWV from personnel at Waste Recycling Centres, Civil Enforcement Officers (CEO's), gypsy/traveller enforcement officers, etc.

We believe irrespective of the final choice of CCTV control room, consideration is made to enhance the provision of services with a 24/7/365 service to maximise potential benefits.

ShopWatch/PubWatch radio system is operated to enable CCTV operators to be alerted to activities that other radio users think they

should focus their cameras on to surveille. Should it be decided to relocate the CCTV control room to Priory House, it will be essential to ensure any radio signals currently used at the Dunstable and Leighton Buzzard can be operated without the loss of this vital aspect that maximises the use and benefit of PSS CCTV. The Council may wish s to adopt a more advanced ShopWatch IP digital radio system, the costs of about £3,500 are applicable. There will be minor costs associated with the relocation of the police Airwave radio system.

The Biggleswade ShopWatch system is currently monitored at Stevenage and this system would need to be integrated into the CBC control system wherever this is located.