CHELTENHAM
BOROUGH COUNCIL

ICT Infrastructure Upgrade Strategy

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Document Control

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0.2	25/10/12	M. Brown	Second Draft – circulated to MS for comments/amendments
0.3	29/10/12	M. Brown	Third Draft – incorporating MT, PW comments and updated to include Scrutiny Task Group recommendations – to MS for discussion
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0.8	22/11/12	M. Brown	Eighth Draft – restructured with MS comments
1.0	23/11/12	M. Brown	Release version

Changes Planned

None

References

1. ICT Review Business Case
2. Scrutiny Task Group Report – ICT Review – September 2012
3. Shared ICT Working Strategy, version 3.0 - 9 October 2012

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1. Purpose

The ICT Scrutiny Task Group has recommended that a long-term ICT infrastructure investment plan is put in place as part of the current budget cycle and as an essential element to support the ICT Commissioning review.

The purpose of this document is to create this plan by:

- outlining the current position of the Council's ICT infrastructure,
- identifying existing or imminent issues for each of the infrastructure components, and
- proposing upgrade paths and costs over a 5 year period.

It also compares the cost of implementing this strategy against existing ICT capital and revenue budgets, to identify any short-fall.

This is a five year strategy that will be reviewed, and revised, on an annual basis.

2. Introduction

The ICT Infrastructure comprises of all the technologies required to be able to gather, store, secure, back up, manipulate, print, transmit and share Council information. This includes servers, desktop devices such as PCs, voice and data networks. It also includes the Council's telephone system. For each of these technologies, there are usually three basic elements – hardware, software and an operating system. Surrounding these core technologies are other products which add protection (e.g. anti-virus systems on email servers) and provide security (e.g. firewalls).

This Strategy looks at what effect Cloud Computing has on the infrastructure elements (4.2), and analyses the financial implications of using a managed service to deliver Cloud Computing via 'data centre' infrastructure services, rather than the Council investing in its own technology (6.1).

The ICT Scrutiny Task Group recommended that the impact of the Council's accommodation strategy be fully understood regarding any decisions on expenditure (or delay in expenditure) on ICT infrastructure. Therefore this Strategy takes into account the potential impact of the Accommodation Review, especially in respect of a move away from the Municipal Offices in the next two to three years, and wherever possible utilises solutions and technologies that are portable between different locations. This is also considered in areas such solutions for remote and flexible working (4.8).

During the upgrade process old equipment will be removed from a live environment. ICT will try wherever possible to reuse this on the Disaster Recovery site, within a Test environment, donate to charity (e.g. IT Schools for Africa) or, if it cannot be re-used, then disposed of in accordance with the Waste Electrical and Electronic Equipment (WEEE) Directive.

3. Assumptions

3.1 Commissioning

As a strategic commissioning Council, the new organisational model will move towards a slimmer strategic core with more services delivered at arms length through a variety of delivery bodies. This makes infrastructure planning for the next five years difficult, as these new delivery bodies may choose to use their own ICT services, sourced from a supplier of their choosing.

The current Commissioning Review of Leisure and Culture may result in a Trust being formed. Past experience indicates that these bodies tend to use their existing ICT service provider for at least two years after the body has been formed. During Year 3 of this Strategy investment in server and data storage is planned. The level of expenditure planned will substantially decrease should service demand be reduced.

3.2 Accommodation

If the Council moved out of the Municipal Offices, then the server room will need to be replicated elsewhere, and all of its incoming and outgoing voice and data communications networks re-routed. Alternatively, the server room and/or the services provided from the server room could be relocated to a third party to manage on the Council's behalf. The investment proposed is, as far as possible, portable to a new office location.

4. Current Position / Infrastructure upgrade requirements

This section provides high level detail of the Council's core technologies, identifying any major issues and/or areas requiring upgrades/investment.

Unless otherwise stated, all equipment and costs detailed within this document include Cheltenham Borough Homes, GO, Ubico, One Legal, Building Control and Audit staff based in the Municipal Offices. It does not include Cheltenham Festivals.

4.1 Microsoft licensing

Almost all of the Council's servers, PCs and laptops use Microsoft Windows operating systems. The Council buys licenses to use these operating systems on a one-off basis. When the Council wants to use later versions of the operating system (e.g. Windows 7), Office (e.g. Office 2010) and associated infrastructure products, it has to re-license and pay for the new licenses.

The last time that the Council undertook a similar, major re-licensing project was in 2000. The Council is now at a point where it needs to update all of its Microsoft licenses to reflect the new products required to bring the infrastructure up to date. As an example, the Council's PCs use the Microsoft Windows XP operating system, and that becomes unsupported by Microsoft in 2013-14.

The ICT department has been working with a third party (ComputaCenter) and Microsoft to identify the products required, and the most cost effective procurement framework to use. The conclusion was that a Microsoft Enterprise Agreement was the best option for the Council. This option is heavily discounted for local government.

The majority of work on upgrading the infrastructure would need to be carried out in Years 1-3, therefore the spend profile would reflect this. The Council would enter into an Enterprise Agreement for three years, then have a 2 year 'break' before it would be time to upgrade all the licences again in Year 6. This licensing approach is common with the other GO partners.

There are some licences which the Council will not need immediately, but may/will need in the next three years (e.g. Sharepoint, Lync). In order to secure the discounted licence price for these products for the next three years, one licence has been factored in per product. At the end of each year, the Council would inform Microsoft of the number of licences in use and will pay Microsoft for these additional licences at the discounted rate. This process is known as 'true-ing up'.

There are some products which are more cost-effective procured using another type of Microsoft Agreement called a Select Agreement. The Council already has a Select Agreement in place. These Microsoft products are bought as and when required. The Council currently has licences for the following products which fall under this category: Microsoft Project (20 licences) and Visio (26 licences). An allowance has been included in the table below to bring these products up to date.

The table below captures the estimated total cost of Microsoft licences over the next five years, including 'true-ing up'. If the number of licences were to drop during the year, the Council would have the opportunity to 'true-down' the number of units (up to a maximum of 10%).

A more detailed breakdown of the Table below can be found in Annex C.

Year 1	Year 2	Year 3	Year 4	Year 5
Microsoft Licences and Software Assurance	Microsoft Licences and Software Assurance +	Microsoft Licences and Software Assurance +	Licence 'true-ing up' or 'true-ing down'*	Licence 'true-ing up' or 'true-ing down'*

£86.1k	Licence 'true-ing up' **£100.5k**	Licence 'true-ing up' **£113.4k**	**- assume cost neutral**	**- assume cost neutral**

4.2 Microsoft Office and Cloud Computing

It is possible to 'rent' the latest version of Microsoft Office rather than buying a licence for it. This Cloud-based offering is called Office 365 and for the type of service the Council requires, would be charged at £15 per user per month. Based upon the Council's 570 users, this equates to £513k over a 5 year period. The Office product covered in 4.1 above will cost £114k for the same period, therefore Office 365 is not a financially viable option.

4.3 Servers and Virtualisation

4.3.1 Servers

Until the introduction of a technology called Server Virtualisation, a server consisted of physical hardware (you could see it and touch it) and inside was its own operating system, processor, memory and storage discs. So if the server room contained 60 servers, there were 60 boxes.

Server virtualization is the partitioning of a physical server into smaller virtual servers to help maximize server resources. In server virtualisation the resources of the server itself are hidden, or masked, from users, and software is used to divide the physical server into multiple virtual environments, called virtual or private servers. This is in contrast to dedicating one server to a single application or task as described in the first paragraph.

It is highly desirable to virtualise the Council's servers for a number of reasons including power reduction (running less physical servers), easier to administrate and manage, better utilisation of processing power etc.

The Council started a server virtualisation programme some time ago. At the time of writing, the Council has 117 servers, of which 65 are virtualised. Although some servers cannot be virtualised for technical reasons, the remainder will be virtualised in Year 1, and there is sufficient capacity on the existing hardware (a HP enclosure and 7 blades) to accommodate this.

However, this HP hardware platform is nearing the end of its productive life (5 years) and needs to be replaced in Year 1.

Year 1	Year 2	Year 3	Year 4	Year 5
Replacement cost **£25k**		Additional equipment required for growth **£15k**		Additional equipment required for growth **£15k**

4.3.2 Server Storage

The Council's data is held on Storage Access Networking devices (SANs) – one is in the server room in the Municipal Offices and the other is located at the Depot and used for Business Continuity/Disaster Recovery.

The Municipal Office SAN is two years old and should be replaced in Year 3. An allowance is also made for the growth in the volume of data which the Council requires to retain (estimated at 25% per annum)

Year 1	Year 2	Year 3	Year 4	Year 5
	Additional equipment required for growth **£15k**	Replacement cost **£55k**		Additional equipment required for growth **£15k**

4.3.3 Server Backup

The Council's application databases are backed up to disc, and then copied to magnetic tape on pre-defined timescales. The magnetic tape library system is expensive in terms of the hardware it uses, and

the cost of the media (tapes). The system has been in place for five years and would have needed replacing in Year 1.

However, assuming that the Council engages with the Forest of Dean District Council (FOD) on shared ICT working, then it is intended to put in place reciprocal arrangements for the backing up of data between CBC and FOD, or another GO partner, each night over existing high speed data links.

This will mean that there will no longer be a requirement for daily magnetic tape backups.

It would be necessary to have a small tape library system to backup files 'off line' (i.e. backups can carried out during the day and will not have any impact on the live environment) and this is cost is included in Year 1.

Year 1	Year 2	Year 3	Year 4	Year 5
Replacement (smaller) tape library system **£7k**	Increase in Rev **£2k**	Backup Server replacement **£5k** Increase in Rev **£2k**	Increase in Rev **£3k**	Increase in Rev **£3k**

4.4 Desktops

4.4.1 PCs

The ICT departments supports 494 PCs, which should normally be written off financially after 3 years, but usually later become 'not fit for purpose' after 5 years. Around 75% of these PCs are 5 years old, or older.

Based upon the age of each PC, the required replacement budget would normally be profiled in Years 1 and 2. However, with the amount of essential work which needs to be undertaken in Year 1 on other ICT activities, large scale PC replacement will not be possible until Year 2.

First iteration

Year 1	Year 2	Year 3	Year 4	Year 5
	494 PCs @ £350 **£172.9k**			

The ICT industry is moving towards Desktop Virtualisation (see 4.4.2) and it will be possible to extend the life of the Council's current PCs by an extra 2 to 3 years by installing Citrix 'client' software on the PC and effectively converting it into a low-powered PC. This technology is not suitable for 'power' users of PCs (estimated to be around 75 within the Council).

There are some very old machines within the Council and these need replacing very quickly as they are causing operational problems daily. It is estimated that there are around 40 of these.

The final iteration below assumes desktop virtualisation is implemented.

Final iteration

Year 1	Year 2	Year 3	Year 4	Year 5
40 New PCs @ £350 19 Client licences @ £41 and 30 replacement monitors@ £90 **£17.5k**	200 Client licences @ £100 and 25 PCs @ £350 and 20 replacement monitors@ £90 **£30.5k**	100 Wyse devices @ £250 200 Client licences @ £100 and 25 PCs @ £350 and 20 replacement monitors@ £90 **£55.5k**	100 Wyse devices @ £250 Replace 25 PCs @ £350 and 20 replacement monitors@ £90 **£35.5k**	100 Wyse devices @ £250 20 replacement monitors@ £90 **£26.8k**

4.4.2 Desktop virtualisation

Desktop virtualisation is a set of mainstream technologies that allows servers to hold images of user desktops, which get downloaded from the server when the user logs in. So, if the user is using a PC that PC does not load up its own operating system (e.g. Windows XP) and does not use its own processing power etc.

This type of technology has many benefits but the main one for this section is that PCs can have a longer life as they are not confined by what version of the operating system they are capable of running. Another advantage is that PCs can be replaced by thin client terminals, which are considerably cheaper than PCs.

The Council uses Citrix XenDesktop as its virtual desktop infrastructure product, and has 85 licenses. This solution is currently in use by any staff using the remote access functionality. A small number of staff also use this facility at their office based location.

The majority of users require a standard desktop (e.g. Microsoft Office, e-mail, access to the Internet etc) and these users are suitable for using desktop virtualisation. A small number of users will require access to a wide range of applications and will therefore not be suitable candidates for virtualisation and will need to retain a PC.

The cost of introducing this technology is captured elsewhere in this document.

4.4.3 Laptops

The ICT department supports 76 laptops which are more expensive than desktops and should be financially written off after 5 years. A laptop currently costs £550 and a docking station £120. Not all laptop users use docking stations, and so an estimate of around one in three laptops will be used to estimate costs. Therefore a unit cost of £590 will be used for budgetary purposes.

Based upon the age of each laptop, the required replacement budget is profiled as follows:

Year 1	Year 2	Year 3	Year 4	Year 5
30 laptops @ £590 **£17.7k**	20 laptops @ £590 **£11.8k**	16 laptops @ £590 **£9.5k**	10 laptops @ £590 **£5.9k**	-

It is no longer necessary to have a Council laptop in order to work from home, as home computers can be used in association with 'Citrix' and dual factor authentication (see 4.4.2 and 4.7.6). Off site working may utilise iPads and a small number of corporately owned laptops on a daily, weekly or monthly loan basis. Therefore the budgets identified above include where iPads will be purchased instead of laptops.

4.5 Data Networks

4.5.1 Local and Wide Area Networks

The Council has a mixture of links including those which connect Council offices to the main network in the Municipal Offices, and to the internet. The cost-effectiveness and bandwidth capacity of each of these links is reviewed annually. As the links and associated termination equipment have been provided by the supplier during installation, there are no replacement costs.

If the links need to be upgraded because of lack of bandwidth, then this will require additional capital and revenue expenditure. However, as the cost of links and bandwidth are decreasing year on year, it is likely that this can be accommodated within current budgets.

4.5.2 Network Switches

The network is essential for servers, applications, PC's and telephones to connect to each other. There are two categories of network switches – core switches and edge switches.

Core switches control the 'backbone' of the network, and no data can be transmitted between devices (e.g. between PCs and servers) without them. They are programmed with 'routing tables' to ensure that data is sent to the correct location. The switch used in the Municipal Offices was installed around 2004 and is in urgent need of replacement.

Year 1	Year 2	Year 3	Year 4	Year 5
New resilient core switch **£50k**				

Edge switches control data between the core switch and other parts of the Municipal Office, and remote Council offices, including Cheltenham Borough Homes.

Most of these switches will not have the speed and capacity to deliver the volume of data to desktops that the new versions of the software (e.g. Windows 7 etc) will require. After taking into account the potential reduction in edge switches required (e.g. Cheltenham Festivals) 53 replacements will be required.

Year 1	Year 2	Year 3	Year 4	Year 5
22 edge switches @ £2k each **£44k**	31 edge switches @ £2k each **£62k**			

4.5.3 Wireless (WiFi)

The Council has started to invest in wireless networking and has piloted provision of three wireless services – for Council staff, for guests, and for GO shared services in the Municipal Offices. There is an increasing requirement for staff and Members to be able to bring their own devices into work and use them for Council business.

As a principle, every new site should install wireless networks as standard. Investment in wireless networks for existing sites will be considered on a site-by-site basis. Some of the wireless technology is reusable (e.g. the access points) but the installation cost (£150 to connect each access point to the central core) is not.

Below is the estimated capital cost of installing a comprehensive wireless network **within the Municipal Offices only:**

30 access points @ £650 per device £19.5k	30 cable installs from access points to the central core @ £150 per cable £4.5k	Equipment for the core connections £3k	**Total capital to install wireless connections throughout the Municipal Offices** **£27k** Increase in Rev Yrs 2-5 **£3k pa**

4.6 Telephony

4.6.1 Switch

The Council's Avaya 1000M Succession telephone switch (or telephone exchange) is a system of electronic components that connects telephone calls – but it also does much more, including diverts, hunt groups, contact centre, voicemail etc. It was installed around 2004, and is maintained and supported by a company called Intrinsic Technologies. There are 90 trunks (lines) used for both incoming and outgoing telephone calls, but it may be possible to reduce this number should the demand drop due to changes within shared services or the results of Commissioning within the Council.

The telephony switch needs to be upgraded but it would make sense to first decide whether or not to have one Switch used by both councils (i.e. the Forest of Dean and Cheltenham).

If it was decided not to share Switches, then the Council will need to spend approximately £70k in Year 2 (plus every 2 years) on consultancy services (engineers, consultants etc) just to maintain the current solution.

There would be an additional revenue stream required in Years 4 and 5 for Voice over IP (VOIP) handset repairs/replacements

However, there is a third option in order to move the phone system forward. The telephony industry has moved to VOIP (Voice over IP) and now more recently to SIP (Session Initiation Protocol). The recommended way forward is to migrate to Microsoft Lync (option 4.6.2 below) which will facilitate flexible working i.e. soft phone technology whereby phones follow individual login anywhere on the network. Lync licensing costs have been included in the Microsoft Enterprise Agreement.

Year 1	Year 2	Year 3	Year 4	Year 5
Option 1 - Upgrade current phone system to VOIP **£135**	No Cost	**£70k**	No Cost	**£70k**
Option 2 - Migrate to single Telephone system **£115k**	No Cost	No Cost	Handset repairs and replacements **£3k**	Handset repairs and replacements **£3k**
Option 3 – Migrate to Lync as main phone system **£10k** **(Has to be done in-conjunction with 3.5.2)***	**£5k**	No Cost	No Cost	No Cost

4.6.2 Unified Communications

Unified Communications is the streamlining of inbound and outbound communication. It integrates and connects landlines, mobiles, email, SMS and instant messaging, presence and desktop. It combines a Council's switch (an IP-PBX), mobile network, data network and desktop environment. It means staff would be able to access any communication channel on any device. They could switch seamlessly between channels – moving from their mobile to their desk phone, or clicking to call the sender of an email. Some councils have fully introduced this technology, many (such as the Forest of Dean) have implemented some aspects of this technology and others, such as Cheltenham, are yet to start. It is expected that the Council will complete a full roll-out within the next five years.

Lync is Microsoft's version of Unified Communications and this is the product which the Council will use. Lync takes away the need for a physical phone, as calls can be routed to a 'soft phone' on, for example, a laptop. This allows greater opportunities for flexible working.

Year 1	Year 2	Year 3	Year 4	Year 5
Handsets, video cameras etc for the pilot group **£13k**	Handsets, video cameras etc **£6k** Increase in Rev **£2k**	Handsets, video cameras etc **£6k** Increase in Rev **£3k**	Handsets, video cameras etc **£6k** Increase in Rev **£4k**	Handsets, video cameras etc **£6k** Increase in Rev **£4k**

4.6.3 Mobiles

The Council and Cheltenham Borough Homes have 451 registered numbers, of which 303 are mobile phones, under a contract with Vodafone. As the contract comes to an end it can be re-negotiated or a new supplier selected. It is envisaged that all GO partners will go out to tender for a joint procurement of a mobile service provider. Whichever option is progressed, the overall contract value is likely to be **cost neutral** as new handsets are usually provided free of charge as part of any new contract.

4.6.4 Smart phones

The Council has 32 Blackberry devices, connected to the Blackberry Enterprise Server (BES) to provide security. The future for Research in Motion as a company is unsure, therefore alternative provision will be investigated. As the majority of Blackberry users are senior staff and managers, who are likely to have their own smart phones anyway, it is likely that CBC email and calendaring facilities will be provided to staff on their personal smart phones, provided that the devices are Government Connect approved (currently iPhone, iPad and specific Samsung Galaxy devices). This move will be **either cost neutral or provide a small revenues saving**.

4.7 Security

4.7.1 Firewalls

The Council currently has 6 firewalls in operation.

- 4 are located at the Municipal Offices (2 x WatchGuard) for general internet access, 1 is for GO staff access (Cisco), and the other is for GCSX staff access (Cisco).
- 1 is at the Depot (Watchguard) and is only used when disaster recovery is activated.
- 1 is in Leisure@ (Cisco) to control public and equipment supplier access.

The 3 Watchguard firewalls are over 5 years old and are due for replacement. It is intended to rationalise the 6 firewalls and to consolidate down to 3 over Years 1 and 2. This excludes the firewall at the Depot as it is expected to have DR arrangements with FOD or another GO partner, who would already have a firewall in place.

Year 1	Year 2	Year 3	Year 4	Year 5
2 firewalls @ £15k each **£30k**	1 firewall @£3k for GCSX **£3k** Increase in Rev **£10k**	Increase in Rev **£11k**	Increase in Rev **£11k**	Increase in Rev **£11k**

4.7.2 Anti virus protection

Anti virus protection is required for PCs/laptops, Servers, Email and Sharepoint (it is assumed that it will be decided to use this product).

- **Anti virus protection for PCs/laptops** is currently included in a security product suite. Assuming that the Council enters into the Microsoft Enterprise Agreement, then this protection will be included within the Agreement.

- **Anti virus protection for servers** is also currently included in the security product suite. Assuming that the Council enters into the Microsoft Enterprise Agreement, then this protection will also be included within the Agreement.

- **Anti virus for Email** is protected at two levels. The first level is provided by a company called MessageLabs who scan Council email messages before they reach the Council. They scan for viruses, spam and other unsolicited emails. Upon arrival at the Council, the email server itself has Sophos scanning software, to carry out a second check. Although it is prudent to have emails scanned by two systems, the MessageLabs service is relatively expensive and will be replaced by a less expensive product expected to cost £3k p.a. Therefore, it is estimated that there will be an annual revenue saving of £4k.

Year 1	Year 2	Year 3	Year 4	Year 5
Revenue saving £-4k	Revenue saving £-4k	Revenue saving £-4k	Revenue saving £-4k	Revenue saving £-4k

- **Anti virus for Sharepoint** is protected on a per Sharepoint server basis. If a service such as Electronic Document Management (EDMS) is needed, then that requires a minimum of 2 servers

Sharepoint option

Year 1	Year 2	Year 3	Year 4	Year 5
	-	2 x Sharepoint server @ £5k each **£10k**	Increase in Rev **£2k**	Increase in Rev **£2k**

4.7.3 Internet filtering/scanning

This facility is currently provided by the Watchguard product and is included within the cost of the firewall. Changing to a new product is likely to be cost-neutral.

4.7.4 Endpoint Protection

This is required for all of the Council's laptops and PC estate to have endpoint protection restricting the use of USB drives and CD-Roms which are common methods for introducing viruses and data leakage in an organisation.

Year 1	Year 2	Year 3	Year 4	Year 5
570 user licenses **£30k**	Increase in Rev **£4k**	Increase in Rev **£3k**	Increase in Rev **£2k**	Increase in Rev **£2k**

4.7.5 Laptop Encryption

Laptop hard discs are encrypted using a product called Becrypt. As this type of encryption is a Government Connect requirement, this will stay in the short term. As Windows 7 is introduced, (currently projected in Year 2), a separate disk encryption solution will no longer be required, but the savings are likely to be only a few hundred pounds.

4.7.6 Dual Factor Authentication

To achieve dual factor authentication (two different levels of access security), the Council uses a password plus physical Vasco tokens. The Council has 185 licenses. 45 people are on the new Citrix Access Gateway, and others are in the process of being migrated to the new solution. It is anticipated that an overall total of 250 licences will be needed, therefore an additional 65 licences will be required.

Year 1	Year 2	Year 3	Year 4	Year 5
20 Licences @ £112 per licence **£2.2k**	25 Licences @ £112 per licence **£2.8k** Increase in Rev **£1k**	20 Licences @ £112 per licence **£2.2k** Increase in Rev **£1k**	Increase in Rev **£3k**	Increase in Rev **£3k**

4.8 Remote/Flexible working

This type of working has increased, and will continue to increase over the next five years. The Council has addressed this issue by setting up a 'Working Flexibly' project in 2008. In respect of the ICT infrastructure, the project has introduced:

- A hot-desk/drop-in room in the basement of the Municipal Offices, used primarily by the Joint Core Strategy (JCS) team
- Provision of home and remote access to business applications using a Citrix platform. There are currently 170 users of this service, including members and GO Shared Service personnel working at GO partner sites
- Installation of wireless hotspots in the council chamber, committee rooms and the first floor which currently provides wireless network access for 20 officers and guest internet access for visitors

- Investigations and pilots of mobile working solutions. Pilot service areas included Trees Management, Building Control and Public Protection and thin client devices to replace traditional desktop PCs

The project has more recently been focussed on delivering some analysis work to support the Accommodation Strategy (see also 6.2). Service areas occupying the Municipal Offices were consulted to ascertain what levels of flexible working was feasible. The outcome of this survey was that:

- 53% needed to be office based – no potential to deliver services other than from an office based location
- 1% could be partial flexibility – the potential exists for partial working from a remote location, thereby requiring a non dedicated workstation within the officer environment
- 46% could be home based – the potential exists for service to be delivered effectively from a totally remote environment, no dedicated officer based accommodation required

The Council will seek to provide staff working flexibly with more appropriate mobile devices which may include iPADs, tablet PC's, smart phones etc. It will be important to maintain the same level of security and configuration management that it currently deploys on its PCs and laptops. Consequently ICT will need to buy software products which will provide complete mobility management for the entire fleet of mobile devices deployed across the Council. The software product would provide the Council's ICT department with the ability to quickly enroll devices into enterprise environment, configure and update device settings over-the-air, enforce security policies and compliance, secure mobile access to corporate resources, and remotely lock and wipe these 'managed' devices.

There will also be a move towards staff and Members bringing their own devices to work – a trend which is called Bring Your Own Device 'BYOD'. Software products can be used to ensure that any Council information can be 'wiped' from these devices when necessary (e.g. if the device is lost or stolen etc).

Software product pricing ranges from £20 to £120 per mobile device, and so £50 per mobile device will be used for budgetary purposes.

It is possible that around 250 staff and Members will move to this technology over the next three years, and will need this software product.

Year 1	Year 2	Year 3	Year 4	Year 5
80 Licenses @ £50 per license **£4k**	90 Licenses @ £50 per license **£4.5k** Increase in Rev **£1k**	80 Licenses @ £50 per license **£4k** Increase in Rev **£2k**	Increase in Rev **£2k**	Increase in Rev **£2k**

4.9 Members ICT Support

New Members are no longer provided with ICT equipment and are expected to use their own PCs, laptops, iPads etc. Existing Members who have been issued with Council equipment in the past, will not be issued with new equipment should their existing equipment fail.

However, the Council will pay for the software (Citrix XenDesktop – see 4.4.2) which gives the Member access to the Council systems, the software used for security access to the Council systems (Dual Factor Authentication – see 4.7.6.), and the software to manage BYOD (see 4.8). This will ensure that any services offered to Members are fully compliant with data security requirements relating to Government Connect, and meets the ICT Scrutiny Task Group recommendation.

No other infrastructure costs have been identified for this area.

4.10 Printing

The Council has recently reviewed its Print strategy and has rationalised the number of multi-functional devices required by introducing faster and more efficient devices, plus a 'follow me' printing facility which has given staff the flexibility to print to any device.

These are on three year leases with Ricoh, with the option to extend by up to two years. The leases commenced in 2011.

There are no additional budgetary requirements anticipated during the next 5 years.

4.11 Service Desk

4.11.1 Service Desk Application

The ICT Department uses an application called Touchpaper. Over the last couple of years other products were trialled but didn't prove as reliable.

Touchpaper is also used by the Forest of Dean and, should shared working with the Forest be agreed, then the two instances of the application will be merged – this will require consultancy services from the company, but would cut the cost by 50%.

Year 1	Year 2	Year 3	Year 4	Year 5
Relicense, reimplement and training £25.7k – but assuming sharing with FOD **£13k**	Additional revenue budget required for annual support & maintenance **£4.5k**	Additional revenue budget required for annual support & maintenance **£4.5k**	Additional revenue budget required for annual support & maintenance **£4.5k**	Additional revenue budget required for annual support & maintenance **£4.5k**

4.11.2 Service Desk Call/Performance Monitoring

It is important that everyone (i.e. Service Desk analysts and back office staff responding to service requests) has immediate visibility as to how the Service Desk is performing. In particular, how many outstanding calls there are, who they are allocated to, how long they have been awaiting resolution etc.

To achieve this, display screens are required – one in the Service Desk area, and two in the back office areas. These screens run off PCs, but only one PC is required in the back office as it can support two display screens.

Year 1	Year 2	Year 3	Year 4	Year 5
Setup cost – 2 PCs and 3 display screens **£3k**				

4.12 Business Continuity

4.12.1 Common GO and Council provision

The ICT Scrutiny Task Group has recommended that the options for disaster recovery should be reviewed in discussion with the Council's GO partners to ensure the best long-term solution is adopted (as part of the commissioning review) and the Council continues to review and enhances its plans on an ongoing basis.

Office accommodation at the current DR site – the Council's Depot - is being reviewed and the outcome may be a loss of space. There have also been recent issues experienced with the loss of power at both the Municipal Offices and the Depot.

During the last year an enhanced uninterrupted power supply (a very large battery) has been installed in the Municipal Offices server room which allows the GO and Council servers to continue to remain operational for up to one and a half hours in the event of a power cut.

The potential loss of accommodation at the Depot means that other locations are being considered to provide fail-over facilities. These include the Forest of Dean, where reciprocal arrangements would minimise financial outlay. Another option may be at Cotswold District Council, where there is a large, refurbished computer room.

4.12.2 GO provision

Disaster recovery arrangements for the GO 'Agresso' ERP system have been fully tested and fail-over protocols have been agreed. This arrangement involves the use of the Council's Depot, where replicas of the 'live' Agresso system are held on servers, and data updates occur every four hours. The data is transmitted across a secure private data network between the Municipal Offices and the DR site.

The cost of the GO DR equipment was paid for by the Council. It is not anticipated that moving the GO DR equipment to the Forest of Dean or another GO partner (as part of a reciprocal DR arrangement) will incur any significant costs.

4.12.3 Council provision

The Council is continuing to develop its disaster recovery/business continuity arrangements for its business systems. The Council is prioritising these systems so that it is clear which systems need to be reinstated first, in the event that disaster recovery is required.

During the summer of 2012 an exercise was undertaken to calculate the cost to implement a full Disaster Recovery solution for critical Council systems using the DR site had been estimated to be around £90k. However, this amount can be reduced by reusing old server equipment being released from the server replacement project (see 4.3.1). This cost has now been reduced to £30k to provide servers to run the critical Council systems.

Enhancements will have to be made to the secure data link between the Municipal Offices and the Forest of Dean District Council offices to provide a larger bandwidth to replicate the data between both sites.

Year 1	Year 2	Year 3	Year 4	Year 5
Disaster Recovery implementation for Council systems **£30k**	Increase in Rev **£15k**	Increase in Rev **£15k**	Disaster Recovery Refresh **£30k** Increase in Rev **£15k**	Increase in Rev **£15k**

4.13 Shared Services – GO, Ubico and Others

4.13.1 GO Shared Services (GOSS)

The Council provides a Support and Hosting service for this shared service. GOSS has provided the finances for all the associated ICT equipment and software, and the private data network it uses. It also funds two ERP Applications Support staff, and one Service Desk person.

The ICT Scrutiny Task Group has recommended that the impact of GO, and other IT applications, on the Council's current ICT infrastructure, and network performance be reviewed as part of this infrastructure strategy.

In terms of the current ICT infrastructure, the GOSS infrastructure is almost all 'stand-alone', in that the servers etc can be physically moved to a different location/host site if necessary.

The only exception to this is the server storage (see 4.3.2) where GO data is held on the Council central storage device. This approach was agreed between ICT and the then GO Programme Board in order to keep costs to a minimum. There has been an estimate made on GO storage growth (and the costs

included in 4.3.2) over the next five years, but this does not include any allowance for additional partners or the introduction of new services.

In terms of the network, the replacement of Core and Edge switches (see 4.5.2) will eliminate current network contention between GO and other Council data 'traffic' within Council buildings, especially in the Municipal Offices (and therefore the ICT Server Room).

It will be necessary to work with GOSS senior management to understand their business's five year business plan and any impact it may have on the GOSS infrastructure.

Assuming a 5 year write-off period for the GOSS servers, these will need to be replaced in 3 years time, but as replacements will need to be financed by GOSS (rather than the Council), these costs are not included in this strategy.

4.13.2 UBICO

When UBICO was set up, the ICT facilities (i.e. PCs, telephony, email etc) used by ex Council but now UBICO staff, was transferred to the company at no cost.

For the purposes of this Strategy document, potential additional Ubico requirements and growth are not considered or costed, as these should be included in Ubico business cases (e.g. for the inclusion of Tewkesbury, setting up of temporary depot sites etc). However, replacement equipment costs are included within other sections of this document.

4.13.3 Others

There are other, smaller shared services in operation, such as One Legal, the Audit Partnership etc. ICT requirements and equipment replacement for these shared services are not considered or costed within this document, although replacement equipment is included for staff based in the Council.

5. Financial Analysis

A full analysis of the ICT Infrastructure investment requirements for capital and revenue for the next 5 years are detailed in Annexes A and B.

5.1 Fixed and Variable Costs

There are elements of the infrastructure which the Council will need to spend money on, which are fixed costs and apply to all service delivery options. These include Microsoft licences, PCs. Laptops, network switches, wireless (for the Municipal Offices only), dual factor authentication and remote/flexible working. The 5 year Capital cost of these elements is £743.4k.

The remaining elements are costs which vary according to the service delivery options. For example, an outsourcer will provide its own Service Desk but the in-house team will need to pay full cost for its Service Desk system but would be half the cost if sharing the system with the Forest of Dean District Council.

These elements include servers, server storage, server backups, telephone switch, unified communications, firewalls, anti-virus email scanning, and business continuity. The 5 year Capital costs of these elements range from £307k to £335.7k depending on the service delivery option.

5.2 Summary Investment Costs

5.2.1 Capital

A summary of the 5 year capital cost to upgrade the infrastructure is set out in the table below:

	Shared Service 5 year costs (£k)	Outsourced 5 year costs (£k)	In-House 5 year costs (£k)
Fixed costs	743.4	743.4	743.4
Variable costs	323.0	307.0	335.7
TOTAL	**1,066.4**	**1,050.4**	**1,079.1**

Note 1 The 5 year cost to upgrade the infrastructure (fixed and variable), based on shared working with the Forest of Dean District, is £1,066.4k.

Note 2 Variable costs reduce for the Outsourcing option as the outsourcer will provide its own Service Desk

Note 3 Variable costs increase for in-house provision, as the in-house team will need to pay full cost for its Service Desk system, rather than half the cost if sharing the system with the Forest of Dean District Council.

5.2.1 Revenue

A summary of the 5 year revenue cost to upgrade the infrastructure is set out in the table below:

	Shared Service 5 year costs (£k)	Outsourced 5 year costs (£k)	In-House 5 year costs (£k)
Fixed costs	34.0	34.0	34.0
Variable costs *	251.0	217.5	306.9
TOTAL	**285.0**	**251.5**	**340.9**

* Variable costs include consultancy and training costs

Note 1 Consultancy costs to plan and implement the new technologies will vary depending upon which option is selected. The introduction of new technologies is estimated to take 70 days consultancy time to design and plan the implementations, and 100 days engineer time to roll out the solutions in the Council.

Note 1.1 Shared Services - The Forest of Dean District Council's ICT management team will provide the majority of consultancy time as it has already planned and implemented the upgrades at the Forest. However, consultancy will still be required where the two council's technologies do not match (e.g. the telephone systems etc.) Therefore it is anticipated that a budget of £80k will be required over the five years. Within the Council, additional resource will be needed to roll-out the technologies, but this will be achieved by paying overtime. Therefore, the overall consultancy/engineer budget required over the next five years for this option is estimated to be circa £85k.

Note 1.2 Outsourcing - the outsourcer will provide its own consultants and engineers to plan and implement the new technologies. The typical outsource daily rate for consultancy is £850, and for engineers is £500k. Therefore, the overall consultancy/engineer budget required over the next five years for this option is estimated to be circa £109.5k.

Note 1.3 In House - The in-house team will have no experience or skills in planning and implementing the new technologies, and so a suitable company will need to be selected by a tender process. The typical company daily rate for consultancy is £1000, and for engineers £700. Therefore, the overall consultancy/engineer budget required over the next five years for this option is estimated to be circa £140.9k.

Note 2 The training budget required to implement and support the new technologies will be in addition to the existing ICT training budget (currently £5k pa)

Note 2.1 Shared Services – the training budget needs to be increased to enable Council ICT staff to be trained on the new technologies. Therefore the overall training budget required over the next five years for this option is estimated to be circa £40k.

Note 2.2 Outsourcing – the outsourcer will be responsible for training its own staff, therefore no requirement to increase the budget.

Note 2.3 In House - the training budget needs to be increased to enable Council ICT staff to be trained on the new technologies. Unlike the shared service delivery option where some training can be carried out by FOD ICT for CBC ICT staff, all training will be required from external companies. Therefore the overall training budget required over the next five years for this option is estimated to be circa £70k.

5.3 Conclusion

Although over the next five years, there will need to be a slightly larger investment made in the Shared Service option (an additional £16,000 capital and £33,500 revenue); the savings that will be made are significantly larger. From a financial perspective it is therefore recommended to proceed with the Shared Service option.

5.4 Funding Strategy

5.4.1 Capital

Given the preferred option for shared service, the following table summarises the strategy for capital funding of the infrastructure investment programme to support that option.

Funding strategy	2013/14 (£k)	2014/15 (£k)	2015/16 (£k)	2016/17 (£k)	2017/18 (£k)	5 Year Total (£k)
Total annual investment strategy budget (based on the shared service – preferred option)	409.5	241.1	275.6	77.4	62.8	1,066.4
Funded by:						
Existing one off funding available	348.0					348.0
General Fund Capital Reserve	11.5	141.1	225.6	77.4	62.8	518.4
Housing Revenue Account (HRA)	50.0	100.0	50.0			200.0
Total funding	409.5	241.1	275.6	77.4	62.8	1,066.4

The Capital investment outlined in Annex A (summarised above) assumes that the budget will be provided for the 5 year period, and that any budget not spent in the year will be carried forward to the following year. It is vital that the investment strategy is reviewed on an annual basis to ensure that the infrastructure investment keeps pace with changes in technology and prices.

5.4.2 Revenue

The revenue implications of the capital investment are outlined in Annex B (summarised below) along with the strategy for its funding based on the shared service option.

Funding strategy - revenue	2013/14 (£k)	2014/15 (£k)	2015/16 (£k)	2016/17 (£k)	2017/18 (£k)	5 Year Total (£k)
Total annual investment strategy budget (based on the shared service – preferred option)	36.0	73.5	60.5	57.5	57.5	285.0
Funded by:						
Existing revenue budgets	36.0	73.5	60.5	57.5	57.5	285.0
Total funding	36.0	73.5	60.5	57.5	57.5	285.0

The Infrastructure upgrade strategy includes expenditure which was already in the programme including some items which were funded from existing revenue budgets. By agreeing the funding strategy for the capital investment, revenue budgets are released to fund the above revenue implications of the infrastructure upgrade programme; therefore no additional revenue funding is required.

6. Owned Equipment or Managed Services

The Capital expenditure summarised in 5 above and detailed in Annex A assumes that the Council will own its own equipment. However, some infrastructure requirements can be delivered through a managed service, and this option is explored below.

6.1 Managed Service

A Managed (or Hosted) service is one where a provider would use its own data centre and its own equipment to run server-based services back to the Council. Therefore the Council would not need to invest in servers, server storage, backup and other server room equipment.

This is a form of Cloud Computing, which is a general term for anything that involves delivering hosted services over the Internet.

The benefits of this arrangement include:

- the service is fully managed by the provider (the Council end user needs nothing but a personal computer and Internet access).
- the Council only pays for as much capacity as is needed, and is able to bring more capacity online as soon as required (at an additional cost)
- security issues are (by and large) managed by the provider
- the need to set up a new computer room and transfer equipment at a new location if/when the Municipal Offices are vacated is potentially negated.
- the provider is responsible for system backup and disaster recovery

The drawbacks of this arrangement include:

- there are large set-up costs
- the provider will be seeking to use virtualised servers in its data centre to deliver the business applications back to the Council, but not all of the Council's business applications can run on virtualised servers
- some of the Council's most critical business applications have interfaces or connectors to other business applications and to the internet. All these interfaces will need to be replicated in the data centre

In order to determine the financial aspects of whether to invest in upgrading/replacing Council-owned equipment or to have services provided by a managed service, the 5 year summary in Annex A was used.

The costs in that Annex are based upon the assumption that the Council will own its infrastructure equipment such as servers.

By looking at the variable costs (see 5.2.1 above), if a managed service could be provided for less than £323k over 5 years (£64.6k per annum) for all of the Council's business applications, then it would be financially viable to pursue this option.

At the time of writing, the Council has 117 servers, of which 65 are virtualised. It has approximately 70 business applications running on these servers. The minimum one-off setup costs are likely to be in the region of £70k. Taking this into account, the provider would have to charge £50.6k per annum or less. A typical annual charge for this volume of servers would be £80-100k, therefore this is not a viable option.

7. Risk Assessment

The key risks associated with this project can be categorised as:

- Risks associated with the failure to invest in the ICT infrastructure, and the implications it will have in sustaining a viable ICT Service
- Risks associated with the success of the project in meeting its time, cost and scope targets
- Risks associated with staff resources and retention

Annex D analyses the risks identified, their likelihood, impact and management.

8. Conclusions

There has been significant under-investment in the ICT infrastructure for a considerable period of time. Whilst the amount of investment needed to bring the infrastructure up to date is considerable, it is in line with investment made by neighbouring council s over recent years.

This investment will, as far as the Council is able to in a period of rapidly changing technologies, address the current shortfall and ensure that the core infrastructure which supports the delivery of key Council services is modern and up to date – one of the key outcomes identified in the Commissioning process.

It will also allow the Council to take a major step forward in the delivery of existing and emerging technologies – e.g. soft phones, iPads etc – to support flexible and modern working patterns. More specifically, this investment strategy will help deliver/address some of the issues raised by the Members' Task Group supporting the review e.g. wireless technologies and more robust business continuity arrangements.

Failure to invest will result in the inability to effectively deliver any one of the service delivery options identified.

Managed services and other Cloud based technologies have been considered, but not considered cost effective at this time.

9. Annex A – Summary of Capital Investment

Technology Area	2013/14 Capital (£k)	2014/15 Capital (£k)	2015/16 Capital (£k)	2016/17 Capital (£k)	2017/18 Capital (£k)	5 Year Total Capital (£k)
CAPITAL INVESTMENT REQUIRED ACROSS ALL DELIVERY MODELS						
Microsoft Licensing	86.10	100.50	113.40	0.00	0.00	300.00
PCs	17.50	30.50	55.50	35.50	26.80	165.80
Laptops	17.70	11.80	9.50	5.90	0.00	44.90
Network switches - core	50.00	0.00	0.00	0.00	0.00	50.00
Network switches - edge	44.00	62.00	0.00	0.00	0.00	106.00
Wireless (MO only)	27.00	0.00	0.00	0.00	0.00	27.00
Endpoint protection	30.00	0.00	0.00	0.00	0.00	30.00
Dual Factor Authentication	2.20	2.80	2.20	0.00	0.00	7.20
Remote/flexible working	4.00	4.50	4.00	0.00	0.00	12.50
TOTAL COSTS	**278.50**	**212.10**	**184.60**	**41.40**	**26.80**	**743.40**
CAPITAL INVESTMENT REQUIRED PER DELIVERY MODEL						
Servers	25.00	0.00	15.00	0.00	15.00	55.00
Server storage	0.00	15.00	55.00	0.00	15.00	85.00
Server backup	7.00	0.00	5.00	0.00	0.00	12.00
Telephony switch	10.00	5.00	0.00	0.00	0.00	15.00
Unified Communications	13.00	6.00	6.00	6.00	6.00	37.00
Firewalls	30.00	3.00	0.00	0.00	0.00	33.00
Anti Virus for Email	0.00	0.00	0.00	0.00	0.00	0.00
Antivirus for Sharepoint	0.00	0.00	10.00	0.00	0.00	10.00
Service Desk application	13.00	0.00	0.00	0.00	0.00	13.00
Service Desk Call/Perf Monitor	3.00	0.00	0.00	0.00	0.00	3.00
Business Continuity	30.00	0.00	0.00	30.00	0.00	60.00
TOTAL SHARED SERVICE COSTS	**131.00**	**29.00**	**91.00**	**36.00**	**36.00**	**323.00**
Servers	25.0	0.0	15.00	0.00	15.00	55.00
Server storage	0.0	15.0	55.00	0.00	15.00	85.00
Server backup	7.0	0.0	5.00	0.00	0.00	12.00
Telephony switch	10.0	5.0	0.00	0.00	0.00	15.00
Unified Communications	13.0	6.0	6.00	6.00	6.00	37.00
Firewalls	30.0	3.0	0.00	0.00	0.00	33.00
Anti Virus for Email	0.0	0.0	0.00	0.00	0.00	0.00
Antivirus for Sharepoint	0.0	0.0	10.00	0.00	0.00	10.00
Service Desk application	0.0	0.0	0.00	0.00	0.00	0.00
Service Desk Call/Perf Monitor	0.0	0.0	0.00	0.00	0.00	0.00
Business Continuity	30.0	0.0	0.00	30.00	0.00	60.00
TOTAL OUTSOURCED COSTS	**115.00**	**29.00**	**91.00**	**36.00**	**36.00**	**307.00**
Servers	25.0	0.0	15.00	0.00	15.00	55.00
Server storage	0.0	15.0	55.00	0.00	15.00	85.00
Server backup	7.0	0.0	5.00	0.00	0.00	12.00
Telephony switch	10.0	5.0	0.00	0.00	0.00	15.00
Unified Communications	13.0	6.0	6.00	6.00	6.00	37.00
Firewalls	30.0	3.0	0.00	0.00	0.00	33.00
Anti Virus for Email	0.0	0.0	0.00	0.00	0.00	0.00
Antivirus for Sharepoint	0.0	0.0	10.00	0.00	0.00	10.00
Service Desk application	25.7	0.0	0.00	0.00	0.00	25.70
Service Desk Call/Perf Monitor	3.0	0.0	0.00	0.00	0.00	3.00
Business Continuity	30.0	0.0	0.00	30.00	0.00	60.00
TOTAL IN-HOUSE COSTS	**143.70**	**29.00**	**91.00**	**36.00**	**36.00**	**335.70**

	2013/14 Capital (£k)	2014/15 Capital (£k)	2015/16 Capital (£k)	2016/17 Capital (£k)	2017/18 Capital (£k)	5 Year Total Capital (£k)
SUMMARY OF CAPITAL INVESTMENT COSTS PER DELIVERY MODEL						
Shared Service	409.50	241.10	275.60	77.40	62.80	**1,066.40**
Outsourced	393.50	241.10	275.60	77.40	62.80	**1,050.40**
In-House	422.20	241.10	275.60	77.40	62.80	**1,079.10**

10. Annex B – Summary of Future Revenue Expenditure

Technology Area	2013/14 Revenue (£k)	2014/15 Revenue (£k)	2015/16 Revenue (£k)	2016/17 Revenue (£k)	2017/18 Revenue (£k)	5 Year Total Revenue (£k)
REVENUE INVESTMENT REQUIRED ACROSS ALL DELIVERY MODELS						
Microsoft Licensing	0.00	0.0	0.0	0.0	0.0	0.00
PCs	0.00	0.0	0.0	0.0	0.0	0.00
Laptops	0.00	0.0	0.0	0.0	0.0	0.00
Network switches - core	0.00	0.0	0.0	0.0	0.0	0.00
Network switches - edge	0.00	0.0	0.0	0.0	0.0	0.00
Wireless (MO only)	0.00	3.0	3.0	3.0	3.0	12.00
Endpoint protection	0.00	4.0	3.0	2.0	2.0	11.00
Dual Factor Authentication	0.00	1.0	1.0	1.0	1.0	4.00
Remote/flexible working	0.00	1.0	2.0	2.0	2.0	7.00
TOTAL COSTS	**0.00**	**9.00**	**9.00**	**8.00**	**8.00**	**34.00**
REVENUE INVESTMENT REQUIRED PER DELIVERY MODEL						
Servers	0.0	0.0	0.0	0.0	0.0	0.00
Server storage	0.0	0.0	0.0	0.0	0.0	0.00
Server backup	0.0	2.0	2.0	2.0	2.0	8.00
Telephony switch	0.0	0.0	0.0	0.0	0.0	0.00
Unified Communications	0.0	2.0	3.0	4.0	4.0	13.00
Firewalls	0.0	10.0	11.0	11.0	11.0	43.00
Anti Virus for Email	-4.0	-4.0	-4.0	-4.0	-4.0	-20.00
Antivirus for Sharepoint	0.0	0.0	0.0	2.0	2.0	4.00
Service Desk application	0.0	4.5	4.5	4.5	4.5	18.00
Service Desk Call/Perf Monitor	0.0	0.0	0.0	0.0	0.0	0.00
Business Continuity	0.0	15.0	15.0	15.0	15.0	60.00
Consultancy	25.0	25.0	15.0	10.0	10.0	85.00
Training	15.0	10.0	5.0	5.0	5.0	40.00
TOTAL SHARED SERVICE COSTS	**36.00**	**64.50**	**51.50**	**49.50**	**49.50**	**251.00**
Servers	0.0	0.0	0.0	0.0	0.0	0.00
Server storage	0.0	0.0	0.0	0.0	0.0	0.00
Server backup	0.0	2.0	2.0	2.0	2.0	8.00
Telephony switch	0.0	0.0	0.0	0.0	0.0	0.00
Unified Communications	0.0	2.0	3.0	4.0	4.0	13.00
Firewalls	0.0	10.0	11.0	11.0	11.0	43.00
Anti Virus for Email	-4.0	-4.0	-4.0	-4.0	-4.0	-20.00
Antivirus for Sharepoint	0.0	0.0	0.0	2.0	2.0	4.00
Service Desk application	0.0	0.0	0.0	0.0	0.0	0.00
Service Desk Call/Perf Monitor	0.0	0.0	0.0	0.0	0.0	0.00
Business Continuity	0.0	15.0	15.0	15.0	15.0	60.00
Consultancy	40.0	40.0	15.0	10.0	4.5	109.50
Training	0.0	0.0	0.0	0.0	0.0	0.00
TOTAL OUTSOURCED COSTS	**36.00**	**65.00**	**42.00**	**40.00**	**34.50**	**217.50**
Servers	0.0	0.0	0.0	0.0	0.0	0.00
Server storage	0.0	0.0	0.0	0.0	0.0	0.00
Server backup	0.0	2.0	2.0	2.0	2.0	8.00
Telephony switch	0.0	0.0	0.0	0.0	0.0	0.00
Unified Communications	0.0	2.0	3.0	4.0	4.0	13.00
Firewalls	0.0	10.0	11.0	11.0	11.0	43.00
Anti Virus for Email	-4.0	-4.0	-4.0	-4.0	-4.0	-20.00
Antivirus for Sharepoint	0.0	0.0	0.0	2.0	2.0	4.00
Service Desk application	0.0	4.5	4.5	4.5	4.5	18.00
Service Desk Call/Perf Monitor	0.0	0.0	0.0	0.0	0.0	0.00
Business Continuity	0.0	15.0	15.0	15.0	15.0	60.00
Consultancy	50.0	45.0	25.0	15.0	5.9	140.90
Training	15.0	10.0	5.0	5.0	5.0	40.00
TOTAL IN-HOUSE COSTS	**61.00**	**84.50**	**61.50**	**54.50**	**45.40**	**306.90**

	2013/14 Revenue (£k)	2014/15 Revenue (£k)	2015/16 Revenue (£k)	2016/17 Revenue (£k)	2017/18 Revenue (£k)	5 Year Total Revenue (£k)
SUMMARY OF REVENUE INVESTMENT COSTS PER DELIVERY MODEL						
Shared Service	36.00	73.50	60.50	57.50	57.50	**285.00**
Outsourced	36.00	74.00	51.00	48.00	42.50	**251.50**
In-House	61.00	93.50	70.50	62.50	53.40	**340.90**

11. Annex C – Microsoft Licence Detail

Product Description	Part Number(SKU)	Qty	Unit Price	Year 1 Price	Year 2 TrueUp	Year 2 Unit Price	Year 2 Price	Year 3 TrueUp	Year 3 Unit Price	Year 3 Price	Agreement Price
WinPro ALNG UpgrdSAPk MVL Pltfrm wMDOP	FQC-03030	570	£ 19.35	£ 11,029.50	-		£ 11,029.50			£ 11,029.50	£ 33,088.50
OfficeProPlus ALNG LicSAPk MVL Pltfrm	269-12445	570	£ 66.69	£ 38,013.30	-		£ 38,013.30			£ 38,013.30	£ 114,039.90
EntCAL ALNG LicSAPk MVL Pltfrm DvcCAL wSrvcs	76A-00007	570	£ 47.06	£ 26,824.20	-		£ 26,824.20			£ 26,824.20	£ 80,472.60
ExchgSvrEnt ALNG LicSAPk MVL	395-02412	1	£ 1,052.18	£ 1,052.18	-		£ 1,052.18			£ 1,052.18	£ 3,156.54
SharePointSvr ALNG LicSAPk MVL	H04-00232	1	£ 1,279.77	£ 1,279.77	-		£ 1,279.77			£ 1,279.77	£ 3,839.31
LyncSvrEnt ALNG LicSAPk MVL	6PH-00298	1	£ 1,052.18	£ 1,052.18	-		£ 1,052.18			£ 1,052.18	£ 3,156.54
LyncSvrPlusCAL ALNG LicSAPk MVL forECAL DvcCAL	YEG-00631	1	£ 22.34	£ 22.34	30	£ 27.00	£ 832.34	170	£ 48.00	£ 8,992.34	£ 9,847.02
SysCtrDatactr ALNG LicSAPk MVL 2Proc	T6L-00237	1	£ 542.21	£ 542.21	-		£ 542.21			£ 542.21	£ 1,626.63
SQLSvrEntCore ALNG LicSAPk MVL 2Lic CoreLic	7JQ-00341	1	£ 3,571.48	£ 3,571.48	1	£ 4,500.00	£ 8,071.48	1	£ 8,000.00	£ 16,071.48	£ 27,714.44
WinSvrDataCtr ALNG LicSAPk MVL 2Proc	P71-07280	2	1248.68	£ 2,497.36	1	£ 1,500.00	£ 3,997.36	1	£ 2,700.00	£ 6,697.36	£ 13,192.08
WinSvrStd ALNG LicSAPk MVL 2Proc	P73-05897	1	228.78	£ 228.78	2	£ 300.00	£ 828.78	2	£ 500.00	£ 1,828.78	£ 2,886.34
Sub Total				£86,113.30			£93,523.30			£113,383.30	**£ 293,019.90**

Select Agreement

Product Description	Part Number(SKU)	Qty	Unit Price	Year 1 Price			Year 2 Price			Year 3 Price	
Project		20	£233.00				£4,660.00				
Visio		26	£90.00				£2,340.00				
Sub Total											

TOTAL				£86,113.30			£100,523.30			£113,383.30	**£ 300,019.90**

12. Annex D – Risk Log

ICT Infrastructure Strategy – Initial Risk Assessment								
The Risk				Original risk score (impact x likelihood)			Managing Risk	
Risk ref.	Risk description	Risk Owner	Date Raised	I (1 - 5)	L (1 - 6)	Score	Control	Action
Governance and General Issues								
1	If the strategy is not implemented then there will be a risk that the ICT services will become not fit for purpose and could lead to additional financial and reputation risks.	Mark Sheldon	29/10/12	4	3	12	Reduce	
2	If the delivery of the Information Upgrade Strategy is not managed in away that resources are aligned with other known demands on the service then there is a risk that some or all of the objectives will not be met which in turn could lead to increased costs	Mark Sheldon	29/10/12	3	4	12	Reduce	
Project Management								
3	If the project delivery plan does not recognise the importance of prioritising the sequence of tasks in relation to other projects then there is a risk that additional costs or reworking will be required.	Mark Sheldon	29/10/12	4	1	4	Reduce	
HR								
4	If there is a loss of key staff within the shared service team during the project then there is a risk that it will not be delivered on time and to budget.	Mark Sheldon	29/10/12	4	2	8	Reduce	
Financial								
5	If the financial estimates included within this strategy are affected because of factors beyond our control e.g.. fluctuating exchange rates then there is a risk that costs could increase or decrease	Mark Sheldon	29/10/12	3	2	6	Reduce	

13. Annex E - Rollout Plan and Outcomes

The Current Position section (4 above), identifies when each of the technologies require the investment and the business reasons why. This Annex identifies, from a user's perspective, the improvements that Cheltenham Borough Council staff and members will start to see, and in which years.

Year 1

- As the replacement PC & Laptops project gets underway, those power users that currently struggle with large documents and large GIS work will see improvement in speed and productivity.
- All new PC's & Laptops will be delivered with Microsoft Office 2010 providing a great leap forward in Word & Outlook productivity. Other than for power users, PC's\Laptops currently on desks will be refreshed using technologies that will allow for more mobility (using any machine in the Council buildings, working from home & working from any Council site). This will increase the lifespan of our existing machines.
- The Council's servers run in a virtualised environment which is now under performing. The planned server upgrades will give immediate performance improvements to backend systems like email, corporate Intranet, Idox etc.
- The expansion of Wi-Fi throughout the Municipal Office will aid mobility and flexibility, will facilitate future projects such as 'Bring Your Own Devices', and will allow future expansion to all other sites.
- The introduction of Unified Communications will bring opportunities for mobility and flexibility across all Council sites. This technology will allow changes in the way staff interact with each other, interact with other organisations, and all staff to pick up their phone and take it with them (anywhere).
- During this year a key central improvement will be Firewalls and Antivirus upgrades. These will be key to providing a protected and secure environment to allow all staff to share data, and provide our customers with the confidence that the Council is able to handle their data correctly.
- Business Continuity and Disaster Recovery is always a core function of the ICT department, with shared facilities and greater storage, a wider range of key business functions can be provided from a DR site. This will allow for reduced downtime for a large number of Council services.
- Users of Microsoft Project and Visio will be rationalised and upgraded to the latest versions.

Year 2

- As the PC & Laptop replacements continue, staff will receive the latest operating system/ Microsoft Office, together with increased compatibility with business applications. This is also fundamental in allowing more flexibility and mobility.
- The continued roll out of Unified Communications will allow more staff to work differently and allow greater productivity.

Year 3

- As the PC & Laptop replacements continue, staff will receive the latest operating system/ Microsoft Office, together with increased compatibility with business applications. This is also fundamental in allowing more flexibility and mobility.
- The main storage and backup systems will be expanded to allow for the growth in the amount of data needing to be stored.
- The continued roll out of Unified Communications will allow more staff to work differently and allow greater productivity.
- Business Continuity and Disaster Recovery is always a core function of the ICT department, with shared facilities and greater storage, a wider range of key business functions can be provided from a DR site. This will allow for reduced downtime for a large number of council services.
- The introduction of a SharePoint pilot will allow for document management and records management to be investigated and a corporate approach identified.

Year 4

- PC & Laptop replacements will continue
- The continued roll out of Unified Communications will allow more staff to work differently and allow greater productivity.

- The rollout of SharePoint will allow for document management to be implemented across all departments, and allow much better collaboration.

Year 5

- PC & Laptop replacements will continue
- The continued roll out of Unified Communications will allow more staff to work differently and allow greater productivity.
- The main storage and backup systems will be expanded to allow for the growth in the amount of data needing to be stored.