IT Strategy (2014-2017)

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Foreword

Information and Communication technology is one of the key enablers for this Council to provide the facilities that are essential to successfully respond to the challenges facing us over the coming years.

It is critical that our investment in technology continues to be based upon sound business decisions that result in cost effective solutions being implemented to support our services.

Our customers continue to demand efficient and effective public services. However, their expectations in the way those services are delivered is changing and will continue to do so. Knowledge of our customer needs, knowing who they are, delivering what they want, and when they want it, is key to our success.

However, the current economic climate means there is an ever-increasing demand to continually create efficiencies in the way we work and to protect the future of our services. This means smarter working opportunities must be embraced by us all.

The previous IT Strategy (2009-2011) focused on using IT to deliver better public services. This Strategy is about making the best use of the investments that have already been made and ensuring new investment creates further efficiencies, reduces costs and enables new ways of working.

Our Corporate Plan for 2013-2014 states that North Norfolk wants effective communications and to deliver year on year improvements in efficiency. This can be achieved by delivering excellent sustainable services to everyone in the District underpinned by the effective and efficient use of IT. .

Tom FitzPatrick   Sheila Oxtoby

Leader of the Council   Chief Executive Officer

1 Executive Summary

This document outlines the Information Technology (IT) Strategy 2014-17 for North Norfolk District Council (NNDC). It aims to provide: a framework for IT developments within the Council; an update for the members and staff on the current state of the IT infrastructure; and horizon scanning for future IT opportunities.

This strategy serves to link IT developments into the Council's overall objectives and detail the governance arrangements underpinning further investment in IT. This will support the Council's provision of excellent customer service and a channel shift in customer service provision i.e. moving more simple transactional processes onto the Council corporate website and into the Council's front office customer services team. (A full glossary of terms and abbreviations used in this document is provided in Appendix B)

The aim of this strategy is to ensure that the Council is ready and able to meet the demands arising from organisational change and reduced resources and to provide the necessary resources to deliver the IT services necessary to support the Council through a period of continuing change.

There must be clear business objectives, real savings and tangible efficiencies to justify future investment.

The development and implementation of the IT Strategy needs to be an integral part of the overall planning process for the delivery of NNDC services and must integrate with our other strategic plans.

The strategy will require regular reviews and strong governance in order to ensure that the benefits are realised and that it continues to meet our developing business requirements.

However, IT is 'part of the solution' rather than the solution itself. The relationship between people, IT and other resources continues to be at the heart of efficiency and modernisation, and we need to anticipate the growing expectations of NNDC customers to ensure we can deliver what they need, when they need it.

It is vitally important that we derive maximum benefit from our existing systems and technology whilst at the same time ensuring that future investment is focused on projects that have the greatest potential for efficiencies and savings.

Efficient and effective use of technology has the proven capacity to deliver savings along with effective management and procurement of the corporate IT resources.

The Council's IT Strategy for 2014-2017 contains some key themes which will drive and support the delivery of IT to meet the Council's business objectives. They are:

- Continuing to maintain reliable and secure services
- Anytime, anywhere 24/7 ability to transact with key services
- Collect information once and manage it effectively.
- Easily accessible accurate and timely information for customers and staff who deal with the public.
- Deploying innovative solutions to enable and drive forward our business strategy
- Providing value for money and maximising the use of our existing resources
- Keeping pace with the opportunities for changing and improving our infrastructure
- Simplicity in our approach providing scalable solutions that can be easily connected
- Enabling smarter more flexible working
- Continue to train and develop our staff with up to date skills and capabilities

2 Introduction

This document details the IT Strategy 2014-17 for the Council. The Strategy is aimed at providing: a framework for IT developments within the Council; an update for the members and staff on the current state of the IT infrastructure; and horizon scanning for future IT opportunities.

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- Providing value for money and maximizing the use of our existing resources

- Keeping pace with the opportunities for changing and improving our infrastructure
- Simplicity in our approach providing scalable solutions that can be easily connected
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In preparation for the development of the Strategy, a thorough consultation exercise was undertaken with services representatives and management to identify their future business requirements.

A programme of research was also been completed to establish the current legislative requirements, market trends and technical and strategic publications from a wide range of central government, trade and professional sources. This included a review of the central Government ICT Strategy, and several key strategic publications produced by the Society of IT Managers (SocITM).

The main objectives of the Strategy are:
- Develop our capacity in order to deliver the change
- Identify where NNDC are now and where we need to be and develop a strategy to get us there
- Acquire and develop the skills needed to be successful
- Identify appropriate solutions by making better use of the systems we have or by investing in innovative new technology where required
- Become smarter, adaptable and more efficient in our working
- Manage the benefits and realise the savings from the investment required in the Strategy

This Strategy is designed to plot a course to achieve successful delivery of tomorrow's modern public services.

3   The IT Vision and Strategic Objectives

The Vision for IT at NNDC is:

'Deliver an IT service that places the customer at the centre of all our development, priorities and decision making. We will do this whilst continuously improving value for money throughout our service provision, utilising innovations in IT to drive and enable our business strategy and continue to develop the skills and capabilities of our staff'

The strategic objectives linked to the delivery of this vision are:
- Save money and deliver improved customer service
- Deliver good IT services, pro-active support and continuous improvement
- Join up IT investments across departments so we maximise the effect of any one IT investment

- Enable new and flexible ways of working across the Council
- Enable the delivery of any future Council partnerships
- Support commercial opportunities within NNDC and with other organisations e.g. providing corporate services to other local organisations

4 The Corporate IT Strategy

The Corporate IT Strategy rests on a set of strategic principles as detailed: service co-creation; shared service delivery; transparent and accountable; future proof and agile; cost effective; secure; supporting government IT policies; robust architecture; best practice governance; best practice procurement; robust data and information management; planned review and refresh of the strategy. These underpin all services that we provide now and into the future. The principles have been set using best practice from across a range of IT organisations in the public and private sectors.

To successfully implement the strategy, we will enhance IT team capacity and capability through a mix of in-house resources and third parties as appropriate. We will assess skills and training needs for the IT team. By working through the Business Transformation Board and IT Work group we will be able to ensure that they are delivering against the correct business priorities.

This section covers the themes of Modernising and Transforming IT at NNDC as well as creating the climate for success.

4.1 External Customer Services
Key Objectives – Improved Customer Service

1. To improve customer access and service provision to the public
2. Reduce costs of service provision
3. Support the delivery and implementation of the Customer Services Strategy

The organisation has invested to increase and improve the channels of communication with their customers including the provision of a customer services centre, some online access to services including payments and plans on-line and other self serve channels.

Work will continue to increase the services using these enhanced channels. This will include: for example an integrated web form for ordering car parking permits online and the further rollout of other service fully integrated e-forms linked to payments (where relevant).

Importantly, there is a need to maximise the customer take-up of the additional and enhanced channels of communication by the public by encouraging all services to consider the information provided to the customer, prioritising web services (This is covered in more detail in the NNDC

Customer Services Strategy).

4.1.1 Customer Information Solutions –

(Cabinet Report Ref 4.3 - Key Workstream 5)

More significant customer service improvements will be delivered through a customer information system (this supports the implementation of the Customer Services Strategy):

- Customer information system should enable us to rationalise our workflow for up to 80% of their general customer interactions (calls through the corporate customer services team) where we currently have poor tracking of customer calls that cannot be dealt with at first point of contact. It will also enable more calls to be dealt with first time by the Customer Service team.
- It will integrate with back office systems where possible to save on duplication of data entry for the customer service centre staff and allow us to share around the organisation (should we choose) common information about our customers will other services. With web integration using web e-forms we can quickly deploy a prioritised list of self-service applications (figure 2 below shows a vision of the solution deployment. The primary objectives of the front office implementation.

The constituent parts of the Customer Information solution will be:

- The Citizen portal will be single front end interaction screen(s) that will allow us to view the key demographic information about each of our citizens and also enable us to update that demographic information in all the source systems when we are notified of demographic information changes such as name, marital status, address etc. This is likely to be driven by web e-forms.

- The central client database is in truth a virtual database – it is a table of data that ties together the many instances of a citizen that exists on NNDC's various back office systems allocating a single unique client record number. This facilitates and enables the implementation of the citizen portal enhancing the customer experience.

The disadvantages of this approach is that if there is no investment in tools and software to enable the customer information system to integrate with NNDC's main back office systems for at least 80% of our main transaction types then we will find that there is duplication of process and storage occurring with duplicate customer information being stored at least twice for the same transaction.

4.1.2 Telecoms and Unified Communications

(Cabinet Report Ref 4.3 - Key Workstream 1 and separate Cabinet report)

It is expected that Telecoms investment will be required over the period of the Strategy delivery to enhance call centre functionality and integration and to enable workforce flexibility by creating a Voice over Internet Protocol (VoIP – integrating voice and data over the same infrastructure) phone infrastructure migrating across from the current digital line set up.

Benefits of this approach will be
- That NNDC can direct dial between NNDC VoIP system and those of partner organisations even if they have deployed a different VoIP supplier system
- NNDC can hot desk if required within their own sites that are VOIP enabled
- NNDC can send their staff mobile calls over their VoIP network and obtain lower tariff cost as a result (may be mobile contract implications – due for review by June 2014)
- NNDC can use a softphone when remote working and connecting over broadband to their office phone number or when in one of their offices.
- Call recording for auditing and training

We require telecoms investment to upgrade and/or eventually replace our current Nortel Meridian 11digital/IP phone system and CC6 Customer management system, to ensure that we can achieve the productivity and customer service benefits described above.

Benefits of a new Customer Management Telephone system include:

- Enables the capability to provide one work queue for customer service requests (calls, email, scanned letters, SMS, social media messaging) and provide call recording

- Enhances capability to make most efficient use of customer services staff using menus on the front of the call that route the call to the most appropriate member of staff, provide messages when this is relevant and enable automated call management where this is relevant

- In summary, this would improve productivity of customer services and customer satisfaction, as they quickly get to the right member of staff and have some phone services provided at any time.

A further phase of development will be that of Unified Communications to provide additional functionality (note through our Microsoft Enterprise Agreement we already have standard MS Lync licences in place)

- Unified Communications (UC) is the integration of real-time communication services such as instant messaging (chat), presence

information, telephony (including IP telephony), video conferencing, call control and speech recognition with non-real-time communication services such as unified messaging (integrated voicemail, e-mail, SMS and fax). UC is not a single product, but a set of products that provides a consistent unified user interface and user experience across multiple devices and media types.

- UC also refers to a trend to offer Business process integration, i.e. to simplify and integrate all forms of communications in view to optimise business processes and reduce the response time, manage flows, and eliminate device and media dependencies.

- UC allows an individual to send a message on one medium and receive the same communication on another medium. For example, one can receive a voicemail message and choose to access it through e-mail or a cell phone. If the sender is online according to the presence information and currently accepts calls, the response can be sent immediately through text chat or video call. Otherwise, it may be sent as a non real-time message that can be accessed through a variety of media.

- Use of video conferencing can save journey time for shorter meetings with partners

The benefits of UC are within the organisation maximising access channels and collaboration reducing the need for face-to-face meetings and travel between sites. For citizens it maximises their choice of channel access and engagement with the council.

NNDC could take an approach to maximise the features in their current systems for menus and working from home which would cost NNDC less than procuring a new VoIP system and Customer Services Phone system.

The disadvantages of VoIP system are quoted as: reliability of the service with some organisations reporting poor quality calls and calls dropping off. In addition from a business continuity perspective there would need to be a backup solution of analogue lines in case there was a catastrophic failure of data connections as Voice and Data are carried over the same connection with a VoIP solution.

4.1.3 Web Services and Web Applications (internet and Intranet)

(Cabinet Report ref 4.6 – Key Workstream 4)

The aims of the Strategy are to create a web presence that:

- allows ease of use for all NNDC customers
- provides services customers want
- provides a platform for customers to have their say
- supports publication of high-quality content
- has an appropriate technical infrastructure

• complies with legislation and standards

Critically, the improvements to the website will be key in driving channel shift from expensive contact channels such as phone and letter, to web based transactions. This is explained further in the Customer management strategy, where Channel Shift is one of the main themes.

The web site will need a major review during the course of the strategy to consider: the navigation, design and ease of access to complete signposting and transactional business with the council.

Suggested options categories for customer interaction on through the NNDC website are:
- Need Information
- Provide information
- Apply for a Service
- Pay for a Service

We could benefit from moving to a single platform for our internet and intranet content management. This would allow sharing of content between internal and external facing internet platforms and reduce duplication in creating and saving content. There is good open source software available such as Drupal that could help deliver this outcome.

We need to review e-forms during the early part of this strategy to speed up the delivery of our objective to increase the take up of self-serve by NNDC customers.

We also need to review integrated web offerings from our back office suppliers to see if they are suitable for delivering aspects of channel shift for customers e.g. the public access product from IDOC that integrates with our Development Control system.

We will be reviewing the use of GIS (mapping tools); in particular how we can use mapping to improve our business process and customer interaction and information provision on the web site. This would involve using maps for visualising more of the information NNDC hold about our customers; for example seeing planning applications close to where the customer lives.

We also need to review our intranet software to see if we can use the same content management and document store for both their internet and intranet using tools such as open source software Drupel or MS Sharepoint (leveraging NNDC's current Enterprise Agreement). Other alternatives, being used by organisations to replace their intranet tools, include the use of business social networking software such as Yammer – easy to administer and create communities of best practice. This will probably best be done by commissioning a proof of concept.

4.2   Internal Efficiency

Key Objectives – Productivity

1. To enable staff flexible/mobile working and hot desking
2. To ensure staff are skilled, equipped, engaged and motivated
3. Access to improved and better information
4. A secure and resilient environment
5. To reduce the number of systems, looking to use contract management for savings, ensure systems fit for purpose, system standardisation, using advances in technology and the best method of service delivery.
6. Improved productivity through integrated systems and use of electronic document management and workflow.

4.2.1 Electronic Document Management System (EDMS) and Electronic Workflow

(Cabinet Report ref. 4.4 - Key Workstream 4)

The Council already has four service based EDMS systems; namely:
- Civica Open Revenues (integrated), in Revenues and Benefits
- Northgate M3 integrated, in Environmental Health
- Acolaid (soon to be integrated to IDOX DMS), in Planning
- IKEN, in Legal Services.

The Council has also set up a corporate scanning facility through the NNDC post room.

In regard to EDMSs, the strategy will cover the following:

- We will look to provide a portal that allows access to client documents on the EDMS systems outside the office and as a user interface which bridges the three document management systems for use by NNDC's Customer Services team.

- We will also consider the possibility of adopting one of the EDMS systems as a corporate system to enable services that do not have integrated document management systems to have a document store to remove the need for paper files and use of unstructured storage on the shared drive. Further research will be needed in this area.

- Some of NNDC's systems also include a workflow facility. Certain documents may have specific activities associated with them. These activities can happen in sequence or in parallel, and may be automated or need manual intervention from one or several people. The workflow can be configured as required for each document, so that it is dealt with every time in a consistent and controlled manner, and because it can handle parallel activities, can often significantly reduce processing time, while highlighting any bottlenecks that occur.

- Even if an operational system has inbuilt facilities for document management and workflow, a corporate solution would simply sit on top of these and provide a capability to view and possibly share documents and tasks across council services, or partner organisations.

4.2.2 Business Change

Appropriate Business change management is critical in delivering the IT Strategy.

It is this programme, which will significantly assist in the Council maximising the use of resources in its aim to deliver continuous improvement whilst making efficiencies.

The exploitation of the new technologies mentioned within this strategy, will allow NNDC IT to deliver a business change programme, enabling it to be flexible, efficient and more customer focussed. This will sit under the governance of the Council's main Business Transformation Programme.

The Council has now established the Business Transformation Programme. The aim of this programme is to review every area of the Council and challenge the way it provides its services and then develop a revitalised leadership and customer led organisational culture. As well as the challenge element, there may be activities such as the procurement / commissioning /de-commissioning of services or areas where business process re-engineering/systems thinking may be required. All of these activities are likely to be influenced directly or indirectly by IT.

IT should be viewed as a strategic enabler and driver for delivering transformation of Services. Therefore opportunities for improving efficiency by exploiting IT should be considered in every service area reviewed.

4.2.3 Business Transformation

Historically, the Council has made significant investment in implementing service based IT systems for many services including Planning, Environmental Health, and Revenues and Benefits. Now the systems are in place, services need to review the use of these systems and their processes to look for further areas of improvement.

It is important that any reviews and subsequent transformation projects are business led and customer focused while being informed and supported by IT.

Additionally the Council will continue to roll out new ways of working providing secure access to essential systems, be it in the office, from a member or officers' homes, in a partner organisation or in a mobile scenario in a customer's home or site. This will require further provision of mobile devices and additional connection and security considerations.

Other area of transformation and improvement include:

- Rationalise print solutions looking to upgrade existing Multi Functional printer/fax/scan devices.

- Reviewing use of LLPG across all of NNDC's key systems as key piece of information for linking client records and information at a property level

- Standardisation of office hardware and software set up and management across the council estate. Consider rolling out more laptops and thin client replacements for desktops using virtualised desktop software.

4.2.4 Management Information

It is recognised in the Council that there is a need to improve the collection and use of information. Gathering once and using as appropriate, managing the information once collected, joining up the information and providing at the right level. In doing this NNDC must maintain security and integrity and ensuring compliance with: data quality standards; legal and statutory requirements.

There is also a drive in the County and from national government for information transparency and information sharing that NNDC will need to understand so that NNDC have systems and polices in place that enable to share information for the benefits of their citizens, providing better services and helping to reduce costs.

- Currently the main performance management tool is the TEN system.
  NNDC also allow users to create Crystal and Business Objects reports depending on the back office system that is being interrogated.

- Information from the TEN system whilst reliable has limited flexibility in answering 'what if questions' or allowing deeper analysis and correlation of exceptional items

- NNDC should review business intelligence tools considering if NNDC would want to replace or complement TEN with tool(s) that would allow local and centralised reporting and interrogation of information and its underlying data.

- Improved web based scorecards could be produced from a new system which would improve the visual display and understanding of their key information for both members and officers.

- There may also be a need to set up a new central repository database (possibly SQL Server Reporting Services - SSRS) of key data that NNDC want to report on and/or share. This will allow the more detailed analysis for decision making to be carried out across the business in a consistent and flexible way.

Whilst some areas of data and information management are covered by existing documents or policies for Data Protection, Freedom of Information, Data Quality it is recommended to bring these all **together under an Information Management Strategy/Policy.**

4.2.5 Corporate Applications

- Each new or replacement service solution will need to be scalable, modern and based on open standards. We will avoid long-term lock-ins and will deploy a standard, interoperable set of applications. There will always need to be a balanced decision made between interoperability and functionality of systems.

- The main challenges for implementation will be handling the integration challenges with other systems and the change management challenge stemming from deep seated work patterns based on their current applications.

- Most of NNDC's key applications run on 'best of breed' local government systems that are market leaders. When contracts come up for review we will review options to rationalise suppliers and maximise maintenance savings if this is in the best interests of the Council.

- When reviewing requirements for new applications we will actively look at options available in the market place such as open sources systems and new models of delivery such as software as a service as opportunities to further review costs for the Council. For example there are very good open source web content management solutions developed.

- We have already commenced the implementation of a new Committee Services system which is due to go live during winter 2013/14

- When feasible we aim to enhance and improve the current Cadcorp GIS solution, whilst reviewing alternative options that may provide better functionality and enhanced working with other public sector organisations

- We will continue to keep a watching brief on the Objective (Limehouse) Document publishing and public consultation system used in planning policy and conservation design.

- We also need to review their current revenues and benefits system to see how NNDC can better support partnership working with this system going forward in the future following technical issues experienced when working with another Norfolk district council.

- There is some work required in some areas to improve system integration where the business processes involve exchange of data between different operating systems. An example of this is the M3 interface with the Kier Whitespace system.

- NNDC applications will be reviewed to ensure they can support shared services – they will be verified as being scaleable and interoperable designed to deliver integration and multi-channel access.

4.2.6 Architecture and Infrastructure Design

- The current technology architecture will be reviewed with a business case developed, to upgrade the local network switches and Telephony.

- NNDC will look to secure budget for faster rollout of desktop replacement either through laptops or deployment of a virtual desktop infrastructure

- NNDC will look at the feasibility of upgrading NNDC's internal local wireless network as a replacement for a fixed wire Ethernet internal network.

- NNDC will need to upgrade their Storage Area Network to increase capacity as well as look at options of Cloud based technologies in particular infrastructure as a service.

- The network is a key component of the infrastructure design. Opportunities arise from joint infrastructures in the form of a private network Cloud (Claranet MPLS) with other local councils and other public sector partners. The national government has also discussed the introduction of national infrastructure in the form of 'G-Cloud' and PSN. NNDC will need to consider signing up in the future with PSN compliant suppliers.

- NNDC will be looking to further segment their network through implementing more VLAN's where this improves performance and resilience.

- IT Security - NNDC will continue to maintain Government Connect compliance working towards PSN compliance (March 2014). NNDC will continue to ensure that NNDC maintain and manage a robust security infrastructure consisting of firewalls, protected council network and filtering and anti-virus software.

- Prepare for emerging cloud technologies such as SaaS and HaaS and use the experience of other districts and councils to assist in the decisions going forward

- Look at rationalising supply provision and possibilities such as UTM (unified threat management)

- Continue with development of remote working with a view to increasing hot desking and reduction in permanent office space

4.2.7 IT Process Excellence

- The IT service will ensure its procedures and processes conform to International Standard of ISO27001: 2005 for Information Security. In other areas, IT services are will also ensure best practice and standards for Business Continuity. The council can therefore be assured that IT services are following good practice in the protection of its data and information and helping the business service areas to do the same. This will also provide confidence to other councils and public sector organsiations who NNDC may want to offer their IT services to or in conjunction with.

- Staff training and development is on going to ensure they have skills and competence to support, develop and utilise the new technology that NNDC are embracing. NNDC IT team will use the SFIA framework to assess staff skills and future training requirements.

- Over the next 3 years, NNDC are envisaging an environment, where IT is viewed as a core capability of the council and strategic differentiator, bringing the citizens closer to the process of government and enabling them to shape the way essential services are delivered.

- NNDC believe that one way to achieve this lies through simple, standard infrastructure and capabilities, more integrated applications, delivered in a flexible and robust way. NNDC solutions will be fully compliant with central government IT strategy (where it applies to local government) , accessible and resilient, with resilient and high performing remote access and tested and proven disaster recovery facilities.

- NNDC will continue to implement ITIL best practice and tools in areas of IT support, planning and change management.

- NNDC will ensure they have fully documented their technical architecture

4.2.8 Democratic Process

As discussed above the Council are looking to procure and implement a new Committee Services system.

The minutes and agendas for all council meetings are published on-line along with member information for the public.

As audio visual technology develops and reduces in costs, consideration will be given to the use of this technology and to broadcasting council meetings over a North Norfolk Council corporate web site to encourage greater involvement in the democratic process.

NNDC will also be reviewing the opportunity to invest in professional video conferencing facilities that can significantly reduce wasted travel time and is increasingly used in partner sites.

The move toward a paperless office is a key outcome for the NNDC business transformation programme. To this end NNDC will be looking to see how council meetings can be run in the future in a paperless environment with the use of member owned tablets and/or council issued tablet devices.

NNDC will pilot Bring Your Own Device (BYOD) Software in the next 12 months to enable Members and Staff to use Tablet Devices and Smart Phones to access council information and documents and help move towards NNDC's corporate aim of paperless meetings (see 4.3.2 below for more information on BYOD).

4.3   The view to 2016 – technology trends

Key Objectives – Continuous Improvement

1. To ensure NNDC are horizon scanning to future proof any IT investment
2. To use IT as an innovator and catalyst for change in NNDC
3. Focus on IT solutions to improve service, reduce costs and/or generate revenue for NNDC.

IT is changing at an ever increasing pace and is offering ever more flexible solutions for customers and staff. This will provide NNDC with further opportunities to transform the provision of NNDC's services in new and innovative ways.

Outlined below are some of the key technology trends which are most likely to impact NNDC's strategic direction beyond 2016.

4.3.1 Virtualisation

The creation of a virtual rather than a physical version of elements of the computing infrastructure is a key trend. It is well established for server storage and has enabled savings through more efficient use of storage, reductions in the number of physical servers and the consequent reduction in energy usage.

The trend continues with a move to virtualised applications and desktops using a server computing model where the virtual desktop is accessed from a remote server. This allows users to access a familiar desktop and use applications from devices such as Smartphones, tablets and thin client as well as thick client devices.

This move to virtualisation also enables a move to 'infrastructure free' IT from external providers as a commodity through the 'Cloud' (this is discussed in more detail below). This approach would replace NNDC's capital acquisition of technology and the in-house provision of infrastructure and desktop service costs by on-going service contracts and licensing. Given the current investment in renewing our desktops and laptops this will be a project that NNDC will look at towards the end of the 3 year strategy.

Action: Having successfully virtualised the NNDC server estate NNDC will carry out a review of virtualised desktop technology to see if this this cost effective and can provide good performance. It has been noted that for some organisations the central server capacity to deliver the service required to the desktop is normally more expensive than using PCs on the desktop.

4.3.2   Bring Your Own Device (BYOD)

Because the virtualised model breaks the link between the user and their 'own' laptop and allows them to access their systems from any browser capable device, it allows more flexibility in the devices that are used. Some organisations are adopting a Bring Your Own Device policy that enables staff to use their own devices for work purposes. This is based on the rapid increase in individual ownership of Smartphones and tablets and individuals personal preference for using these devices. This is particularly relevant to members who may want to use their own tablets for accessing email, calendar and intranet.

Action: NNDC are looking to pilot BYOD for officers and members in the next 6 months on the assumption that IT are provided with resources and funds for the project.

4.3.3   Use of social media for customers and staff

Increasingly people are using social networks and mobile devices to stay in touch, communicate and collaborate; the use of social media is replacing the use of email. Customers and staff are increasingly used to accessing and commenting on services via social media, providing a valuable means of communicating with customers, and capturing their views on the quality of services the councils deliver. Data analysis tools are being developed that will allow organisations to identify key terms being used about them and their services through social media as a feed into future strategic decisions about

the level of services offered. This IT strategy will take account of the prevalence of social media in the delivery of future services.

Action: NNDC IT will keep a watching brief on this looking at how subscribing to new tools can provide better intelligence from NNDC customers and enable NNDC to communicate service improvements and promote local events with their customers. NNDC IT would work on this in conjunction with the NNDC Web communications team.

4.3.4 Cloud Computing

In IT terms 'Cloud' computing or 'Cloud' based services is creating a significant transformation or Channel shift in the way network, servers and applications are sourced and utilised.

NNDC have already been participating with Cloud computing in the way they host their housing system and Planning policy documents system externally.

The business rationale for moving towards 'Cloud' based services is to reduce the locally installed infrastructure and network within the council. This includes data centres, servers and traditional desktop devices.

Cloud computing is Internet-based computing, whereby shared resources, software and information are provided to computers and other devices on-demand, like electricity.

The term "cloud" is used as a metaphor for both secure private and public Internet, based on the cloud drawing used in the past to represent the telephone network and later to depict the Internet in computer network diagrams as an abstraction of the underlying infrastructure it represents.

Typical cloud computing providers deliver common business applications online that are accessed from another Web service or software like a Web browser, while the software and data are stored on servers.

This strategy by using 'Cloud' based services will make it possible to reduce the locally installed infrastructure within the council. This includes data centres, servers and traditional desktop devices.

Categories of vendors and services, provided according to Cloud Computing Architecture types:

- Software as a Service (SaaS): Software deployment model whereby a provider licenses an application to customers for use as a service on demand

- Platform as a service (PaaS): Delivery of computing platform & solution stack as a service

- Infrastructure as a Service (IaaS): Delivery of computer infrastructure (typically a platform virtualisation environment) as a service

Some risks identified with Cloud Computing include:

- Wide Area Network Complete failure – communication or central infrastructure (need resilience in communications links)
- Slow connections speed e.g. figures even in London of Google Apps is 6 seconds
- Lack of ability to interface for business applications – quoted as an issue with over 50% of cloud users and NNDC IT report that they cannot interface easily with the Locator application
- Security – which country is data residing needs to be in a European state

Action: NNDC IT will keep a watching brief and where relevant will look at cloud solutions where they can provide a cheaper or easier to deploy and maintain solutions for NNDC applications or infrastructure.

4.4   NNDC Top Seven Risks

The top seven organisational IT Strategic risks have been identified, these are discussed below, along with their mitigating action.

(1) Inadequate funding for IT could result in outdated systems.

A critical requirement is the development of a clear IT strategy that underpins the requirements and needs of NNDC. This document sets out the framework and effective governance, which will ensure that it remains relevant and current.   Senior management and cabinet belief and support in this strategy and the required investment are critical to NNDC's future development and success.

The adoption of portfolio management and a phased approach is a key element of managing this risk. By distinguishing between the things the Council has to do and investments that are discretionary NNDC will be well placed to make strategic choices about where to direct and focus resources to efficiently and reliably run the underpinning infrastructure.

This strategy will also seek to achieve efficiencies through the pooling of commodity expenditure at a corporate level allowing NNDC greater leverage with the supply chain.

Over the longer term it is prudent that alternative models of sourcing and supply are explored. Robust shared service models will increase NNDC's buying power and leverage. Similarly, Software as a Service (SaaS) may

offer opportunities to avoid building internal infrastructures when these could be offered, possibly as metered services, by other organisations.

(2) NNDC may not take sufficient due care and due diligence in protecting the confidentiality, integrity and availability of the information it holds.

Information Assurance and Information Management are key foci within this strategy. With Data Protection legislation and the Government Connect programme, security awareness and security protection has significantly improved over recent years.

The Council has an existing IT Code of Conduct, and has provided guidance on protecting confidentiality and data, available on the intranet, to staff.

A number of key technology investments have been made to increase information security and provide more robust protection of the Council's information assets such as Intrusion Detection and improved firewall management.

Over the course of this strategy NNDC will need to increase skills and awareness of information security threats across the organisation.

(3) Risk that Business-IT alignment may not be strong enough resulting in a disconnection between business drivers and technology adoption.

The role of the NNDC IT Manager and the new proposed IT Work Group and Business Transformation Board will be key to mitigating this risk in business engagement and justification of IT investment.

Key business strategies are connected to IT in a variety of ways. For example, IT professionals are members of the Business Transformation Board and key business transformation projects.

(4) Any approved capital programme could get cut due to central government cost cutting

With the current economic climate and central government cutbacks NNDC could find capital expenditure under pressure due to the additional revenue costs it adds to budgets and depreciation resulting in NNDC's balance sheet.

This is mitigated by robust and compelling business cases that drive the delivery of NNDC's IT investment that take real costs out of NNDC's business and/or generates additional revenue/contribution to NNDC's fixed costs.

(5) NNDC staff may not have capacity to support the IT led change

Project budgets need to support additional/specialised resource to implement

the IT led change. The organisation needs to pace the change with the variable and fixed resource capacity NNDC have in house to support the successful delivery of the IT strategy.

(6) Scale and Complexity of Projects may lead to failure to: deliver; to accurately scope; and effectively manage change budgets.

Risks increase directly with the scale and complexity of IT projects. Planning an incremental process of development, with careful contingency plans, can mitigate some of these risks and will avoid problems that cannot be anticipated on the path from small to large, complex systems.

7) May have inadequate support from staff and customers to adopt new ways of working

Staff and customers may not adopt systems, tools and approaches new ways of working which impacts the realisation of benefits and could lead to complaints from customers and loss of morale from NNDC's staff. NNDC can mitigate this risk by good staff and customer engagement and consultation. Staff training in new systems and processes will also be an essential mitigation.

5   The Business Transformation IT Strategic Roadmap

As well as looking at skills and priorities for IT delivery to provide a more robust strategic and customer focus, work will be undertaken in developing detailed business cases for the all the investments required to deliver the IT Strategy. All investments will require a business case.

It is from this point that a programme of business transformation projects will be rolled out across the Council. These will either be under the umbrella of the NNDC Business Transformation programme or the IT Work Group for more discrete IT related projects and programmes.   Table 3 below provides a summary of the priority actions to be undertaken to implement the NNDC IT Strategy.

The capability of the IT team to deliver the IT Strategy will need to be prioritised against the current IT Workplan. It is a key assumption for any additional technical and project resource will be provided for any of the IT strategic investment projects detailed below.

Table 1 – Business Transformation Action Plan Next 3 Years

Action	Delivery Timescales			IMPACT (H,M,L)	Assumptions and Comments
	Within 12 Months	Within 12-24 Months	Within 24-36 Months		
Business Process Reviews considering implications for IT systems changes and enhancements	●	●		H	BPR Capacity available in services Would be on-going
Review existing applications	●			L	Only if support for this from the services
Infrastructure improvements following recommendations from the Technology Infrastructure Roadmap		●		M	IT technical team
Review and Procure Intranet and Internet Content Management	●			H	IT apps and Web team resources
Procure and implement new Telephony	●			H	IT technical team
Procure and implement new POE switches	●			H	IT technical team
Pilot Bring Your Own Device	●			M	IT technical team
Review Requirements and then Procure and Implement Management Information System		●		M	IT apps team and capacity in service
*E-forms software procurement and implementation	●	●	●	H	IT apps team and Web team
*Customer information system procurement and implementation	●	●		H	IT apps team and Customer services
*Integration software procurement and implementation	●	●	●	H	IT apps / Web teams and Customer Services
*Procure and Implement EDRMS/Workflow licences and training	●	●		H	IT apps team and Customer services
*Procure electronic document viewer		●		M	IT apps and Web teams
Procure and implement Multi-Functional devices		●		M	Print room when capacity allows with help from IT
Remote working policy	●			H	HR (project on hold)

Action	Delivery Timescales			IMPACT (H,M,L)	Assumptions and Comments
	Within 12 Months	Within 12-24 Months	Within 24-36 Months		
completed Information Management Strategy/Policy completed					Assumes Information Management Capacity
Pilot Mobile applications for Service teams		●		M	IT apps / technical teams Capacity in services
Pilot Unified Communications		●		M	IT technical team
Review Cloud solutions			●	L	IT apps and tech team
Implement new Service Desk System	●			M	IT tech and apps team
Upgrade SAN		●		M	IT technical team
Review and Stress test Wireless Network and Remote Network		●		L	IT technical team
Review SIP and Virtualised Desktops			●	L	IT technical team

Jobs from existing plan						
OPENRevs additional modules	●				H	Scheduled in next 12 months in existing plan
GIS upgrade database and server	●				H	Scheduled in next 12 months in existing plan
More Planning on the web (from Peer review)	●				M	In existing plan, to be scheduled
LLPG Match to Council Tax	●				M	In existing plan, to be scheduled
HR new modules	●				M	In existing plan, to be scheduled

*All these projects will be linked and considered together

Assumptions
- IT staff;
  - Technical team, additional 1 FTE
  - Web/Applications team, additional 1.5 FTE
- Other services have capacity when required, but BPR work for instance is not in Service Plans
- This is done with our best knowledge of what is intended, we could procure systems faster but if we do, what would they deliver? To ensure that the correct solutions are purchased and benefits are understood, more time has been allowed up front to ensure that investment is made in the right place to give the most benefit.

6   Corporate Business Transformation IT Investments – NOTE: more detail of the estimated project costs and benefits are contained within the Cabinet papers for its meeting in November 2013.

Table 2 – Business Transformation Investments for the Implementation of the IT Strategy

Theme of Modernising and Transforming IT	Sub Heading (if applicable)	Capital Item Description	Capital Cost £	Revenue Item Description	Revenue Cost £ (Years 14/15 to 19/20)
Telecoms and Unified Communications (Telephony)	Architecture and Network (5.2.4)	Implementation of Hardware consultancy (one-off)	10,000		
	Telecoms and Unified Communications (enabling flexible and mobile working)	VoIP Phone Equipment	90,000	Software Maintenance	20,000
		Customer Contact Centre	30,000		
		VoIP and Customer Contact centre implementation including consultancy	30,000		
Electronic Document Management System (EDMS) and Electronic Workflow	Workflow and EDMS	Licences for EDMS	100,000	Software Maintenance	100,000
		Licences for Viewer	20,000		
		Back Scanning 2 staff 1 year to back scan live business files into EDM system	60,000		
IT Infrastructure	Management Information	Software	40,000	Software Maintenance	16,000
		Consultancy for management information implementation	10,000	Contract Staff for 1 year*	33,000
	New Print Solution, multi-functional devices	Hardware(Multi-Functional Device)	40,000	Same as current printers	0
		Mobility Software	80,000		54,000
Web Services and Web Applications (intranet and Internet)	Web Services	E-forms Software	10,000	Software Maintenance	33,750
		Personalised web portal	15,000	IT Applications Development Staff (1.0)	165,000
		New Content Management	30,000	Software Maintenance	22,500
		Web Site Development Consultancy	15,000		
		Training	5,000		
		Integration Software	30,000	Software Maintenance	112,500
		Line of Business API's (application programming interface), software integration with main line of business systems - software from Line of Business Suppliers	30,000		
		Consultancy for system integration software	10,000		
Customer Information	Customer Solution	Software	40,000	Software Maintenance	30,000
		Customer Solution implementation including consultancy	10,000		
Business Change	Programme Manager			Business Transformation Manager*	100,000
	Business Process Review			Business Process Review*	20,000
		Sub Total Capital	**705,000**	**Sub Total Revenue**	**706,750**

Key Assumptions
1. Maintenance costs = estimated 15% of capital costs
2. Average FTE salary with on costs = £33,000
3. IT staff:
   - Applications/ IT Support additional 1.0 FTE for 5 years
   - Desktop Engineer/IT Support 1 FTE for 1 years

Finances Summary
- Total Revenue = £706,750
- Total Capital = £705,000

6.1 Business Transformation IT Investment Benefits

Some specific Benefits that could be accrued from the proposed IT investment are detailed below. The full business case would be required for each tranche of IT investment as outlined above to unlock the quantifiable and financial benefits required for measuring return on investment. The total benefits over 5 years for the investment in IT is Business Transformation is £1,539,324. (See Table 3 below and Business case included at Appendix 4).

6.1.1 Productivity Savings
- Reduced duplication of data entry and manual processes automated

- FTE savings for increased volume of self serve through telephony automation and web applications i.e. reducing NNDC's transaction costs

- Productivity savings from mobile working less time travelling to office means staff can carry out more visits

- Improved management information and analysis to build better services and make better use of scarce resources e.g. capacity management – better decisions

- IT better able to support business continuity plans

- Infrastructure that has increased resilience and is better prepared for Shared Services

- More flexible workforce, made possible through new technologies

- Better asset management including making better use of buildings and technology infrastructure

- Being seen as an attractive employer able to recruit and retain staff

- Being seen as a capable and preferred partner for the delivery of shared services

6.1.2 Enhanced Customer Satisfaction

- Improved client management with single client view and less duplication of data capture

- The IT strategy will provide many opportunities to enable an agenda of more citizen engagement through for example developing the potential to webcast council meetings and consult with Citizens using text.

- Single point of access for customers for enabling changes to key demographic and personal data.

- Customers empowered to carry out more of the simple transactional contacts without need to speak to us at a time that is convenient to them through more and easier to use self-service applications on NNDC's web site

- Improving citizen satisfaction, consultation, co-production and collaboration through web technology applications

Table 3 – Business Transformation Cashable Benefits

Total Annual Savings (full year forecast)	
	£
Channel Shift	214,500
Accommodation Saving	40,000
Telephony and Printers	59,100
Productivity Savings	61,300
Total	**374,900**

Savings	Totals
Year 1	143,939
Year 2	270,686
Year 3	374,900
Year 4	374,900
Year 5	374,900
Total 5 Years	**1,539,324**

Appendices:

Appendix A

Current and Future State

<u>Current State</u>
The pressures affecting local government are outlined in the introduction of this strategy document. There are also many IT related issues and pressures. These include:

- Central government forcing local authorities to meet significant cost reductions which has serious implications in relation to information management and integration, but in the absence of this the Council would itself also be driving such changes forward.

- The Council wanting to continue to deliver high-quality services at a reduced cost

- The Council historically operating as a series of silos reflecting on the way it has procured and implemented its specialist IT systems. There are therefore opportunities for more active co-operation between service groups.

- National Government ICT Strategy (2011) and the implications this has on procurement and infrastructure with areas such as the Public Sector Network (PSN) and Government G-Cloud as applicable to local authorities.

A summary of the findings from the research process undertaken in the development of the strategy, which identified strengths and changes required for the future is outlined in Table 1 and Table 2 below:

Service Dimension	Strengths Today	Challenges For The Future
Value	- Seen as providing good value for money in day to day service provision. Cost of IT service £2910 per user. SOCITM average is £3033 per user. Average across UK industries is £4,000 per user.	• Raising IT from a "utility" service seen primarily as a cost into one, which adds significant strategic business value. • The downside of the current spend on IT is that NNDC IT may have less resources than they need at a level that does not have all of the required skills. This may lead to less than optimal use of current IT solutions and the ability to drive the use of more innovative IT solutions for NNDC
ICT Priorities	- Delivery of a prioritised set of business/tactical projects to incrementally improve NNDC service delivery and 20% staff cost base reductions in last three years	• Supporting channel shift through fully integrated web applications and automated telephone solutions wherever possible delivering cost savings and greater accessibility for customers • Review and consider single solution for intranet and internet content management • Redesign of NNDC's current website • Improving information and communications reviewing the

Service Dimension	Strengths Today	Challenges For The Future
		intranet looking at technology replacement • Creating a support for a paperless office with the implementation of a Corporate EDRMS and Workflow system • Improved and enabled flexible working through: mobile working, remote working and hot desking • Planning for future shared and partner services in particular interoperability between partner applications and telecoms • Single customer view and improved customer information management and information sharing • Enhanced management information solutions • Bring Your own device for more flexible working • Review and stress test NNDC's current corporate wireless network • Implementing open source (software free from licence costs) software where available and cost effective More detail on Technical Infrastructure delivery detailed below • Cloud Computing where this is appropriate – pilots and proof of concepts as NNDC IT watch developments in this area. NNDC already have two hosted cloud systems: Locator for housing and Capita payment system • Need to increase headcount or create budget for investing with third party and contractors to deliver an ambitious transformation programme
Day to Day Service Provision	- Good day to day service provision with good customer satisfaction and system uptime. Customer surveys providing satisfaction levels	• Obtaining the necessary funding and ensure that capacity and capability is in place to deliver the breadth of required service. • Carrying out a skills review using the SFIA framework to ensure NNDC IT have the right skills and capability in the organisation to deliver an ambitious business and

Service Dimension	Strengths Today	Challenges For The Future
	of circa 80%. - Management of NNDC's printing solution is a key area of opportunity to facilitate flexible working and save money. - Good asset register but asset information exists in various forms including paper and electronic - NNDC IT do not have a good service desk system.	IT strategy • Change governance and processes to optimise use of resource on the right corporate priorities implementing where relevant good industry practice such as ITIL. • Continuing desktop refresh preparing for capability for officers to do more work remotely and through hot desking which may mean investing in more mobile technology (tablets and laptops) and/or moving to desktop virtualisation with thin client terminals on hot desks and officer homes. Replacing aged PC's and deployment of windows 7 will help with the issue of slow login times reported by some officers at NNDC. • Supporting and testing improved Disaster recovery and Business Continuity capability • Opportunity to reduce printers with few, faster and enhanced Multi-Functional devices with follow me printing for staff • Implement a new open source service desk system that supports ITIL practices and improves electronic management of assets
Delivery	- Flexible, based on Prince 2 project management methods and tools not being overly bureaucratic – projects generally delivered on time and to budget	• Corporate Project and programme delivery perceived as not always delivering fully on expectations. Making sure that business change and IT enablers are joined up. This will be addressed through the NNDC Business Transformation Programme and the organisation operating a more agile approach to project requirements and execution i.e. Proof of concepts and pilots to mitigate investment and implementation risks for utilising new innovative technology and applications. Project management approach will be determined by the nature and scale of the project
Applications	- Historically implemented best	• Use of web solutions to give officers single points of access to

Service Dimension	Strengths Today	Challenges For The Future
	of breed applications for NNDC's key operational services areas (See IT Priorities above). - RedDot is being used as the core content management solution - Planning pages are hosted by NNDC, and planning applications are submitted via the National Planning Portal site. NNDC are looking to go live with IDOX Public Planning in September - Objective is used for planning consultation	client information and documentation • Implementation of Customer Services technology and applications to enhance the customer experience and reduce costs – supporting the Government agenda of 'digital by default/design' • Improved Information sharing across systems • Development of an Information Management Strategy and responsibility for Information Management in NNDC • Setting/Configuring scaleable systems to support future shared services environment • Anticipating the need to switch from legacy platforms to avoid being forced into taking a tactical decision on platform changes. This could help in further rationalising number of system platforms and providers reducing annual costs of maintenance. Many suppliers can offer competitive integrated single database solutions for multiple services that the Council has to provide. One planned review is the Objective(Limehouse) Planning Policy Consultation system
Architecture	- Some documentation on IT architecture which can evolve into a strong strategic framework	• Documenting fully NNDC's IT Technical Architecture and maintaining the documentation. • Ensuring that NNDC IT consider the implications and benefits of new architecture when there are short-term tactical decisions to be made e.g. in the future when NNDC need to replace infrastructure such as application servers is a cloud based offering more cost effective and better suited to NNDC's business requirements. (See Table 2 below)

IT Governance	- An IT Work Prioritisation Group that also has in scope review of	• Maintain good governance:
		  o Giving clarity of how IT decisions are made
		  o Maintaining a close fit

Service Dimension	Strengths Today	Challenges For The Future
	significant IT change and Prioritisation represents the Corporate Leadership Team and Heads of Service	between the Council's Corporate business strategy and its Corporate ICT Strategy o Giving IT more clarity on business priorities and how to direct resources o IT helping to input into business cases at an early stage where additional capacity and capability is required to successfully delivery any business led change

Table 1 – Summary of the Corporate ICT Strategy Discovery Phase IT services

Area of Infrastructure	Current State	Challenges For The Future
Data Centre (Back-up and DR)	- The current data centres are split between one in the Civic Council Offices in Cromer and a new Disaster Recovery facility running out of a Council offices in Fakenham. Both offices provide well organised servers over 3-4 racks with predominantly virtualised servers and Dell SAN storage. There is an expectation that there will need to be investment in the SAN within the next 12-18 months. There still some work to complete on tidying up cables and moving equipment around in the existing racking so that similar hardware sits in the same racks. The technical set up is summarised in the bullet points below: - Veeam software is used to backup the SAN storage a	• A dual site DR facility is best practice for the industry • The current design provides plenty of offsite capacity in terms of processing, storage and network connectivity • The data replication policy and process provides flexibility for different workloads. • The solution should be tested annually for the main systems and tests should focus on the end to end solution rather than individual components • The usage of the network link to Fakenham should be reviewed as 1GB may be over generous for the DR requirement • A hosted backup

Area of Infrastructure	Current State	Challenges For The Future
	back up server - Data is also backed up to tape using NetVault - Tapes are managed on a 7 day cycle and stored at the local firestation - The DR suite has a duplicate set of hardware; 6 VMWare Physical Servers, backup server and SAN iSCSI storage - Only the SAN storage remains to be moved from the Cromer site to Fakenham - There is a 1GB leased line link between Fakenham and Cromer - Data is copied both hourly and daily to the DR storage dependent on requirements - A power outage and recovery test is being planned	solution may be considered as a long term option when the current DR equipment is due for renewal (not for at least 2 years).
Telephony	- The old mostly non VoIP, Nortel Meridan system has had its life extended through NNDC's support agreement with Beckett Telecom. The Council has 30 ISDN lines. - The reporting on calls and journey of calls is now managed via two reporting systems. With a new phone system this could be managed through one reporting solution. - A summary of the current state is detailed below:	• The telephone solution is dated but the small accommodation footprint means NNDC does not have the cost saving potential that other LA's have used to fund a VoIP implementation • A more modern VoIP system would provide greater functionality for expanding digital channels (web chat, automated voice responses) and better enable the strategic driver of flexible

Area of Infrastructure	Current State	Challenges For The Future
	• The telephone network is provided by a Nortel Meridian PBX (15 years old) running 30 ISDN lines and CC6 contact centre (5 years old) with a 20 agent licence • Rarely have engaged tone indicated sufficient capacity • Connection to handsets is made via patch panels in network cabinets • No VoIP capacity • Reporting software not being used • Wish to use more automated answering as issue with phones ringing around offices after 5.00pm	working/home working • The lack of a call reporting solution limits the ability to identify trends in call demand for each service. • The telephony solution may also be limiting the drive for more flexible working. • In the medium term, a unified communications platform should be considered possibly including a soft phone (e.g. Microsoft Lync) for field and home based staff • In the medium term review the change from ISDN to SIP Trunking which works more effectively with VoIP telephone solutions
Networks	- The council has wireless networks in its Civic offices in Cromer and Fakenham. This is not high speed wireless and would need upgrades to enable this to replace the use of Ethernet desk cables – the performance of some of NNDC's key business application (e.g. Planning with GIS) would not be acceptable if deployed through the current wireless infrastructure (capacity for 250 users). NNDC IT would need to be clear on the business drivers and business case for going	The LAN design at Cromer is appropriate for the building size and usage. • The WiFi solution provides a secure addition to support flexible working. • WiFi stress testing to support user hot desking • The minimal number of WAN links reflects the small number of administrative buildings in use. • The WAN capacity is generous for the current usage profile

Area of Infrastructure	Current State	Challenges For The Future
	down this route. - Latency (slow speed) has been well catered for with the segmentation of the network into VLAN's. However there is further work that could be applied into setting up additional VLAN's. The Wide area network and Internet links are well supported as is the size of the link to the Fakenham Office (1GB). - The Claranet MPLS (private cloud) network for enhanced partnership working with other public sector organisations puts NNDC in a good place however the move in the next 12-18 months is to work with PSN compliant organisations (there are not many yet) and Claranet is not one of these so as a minimum NNDC IT will need to review this contract in 2017. - PSN compliance needs to be updated by September 2013 - NNDC have extensive use of Fibre optic cabling for both NNDC's internal (LAN) network and external (WAN) network More detail about NNDC's Networks is provided below: - The Cromer office local area network (LAN) is provided by 2 cabinets, one at each end of the office, each containing 5 3com switches serving 175 out of the 350 workstations.	and there may be options to reduce costs by scaling this back - A virtual DMZ is technically sound but many Local Authorities prefer physical separate as well.

Area of Infrastructure	Current State	Challenges For The Future
	- These are connected via CISCO 3750 switches and 20GB fibre to the server cluster. - Aruba is used in the Cromer office to provide wireless over a secure VPLAN - A WAN (wide area network) connects the Cromer LAN to the Fakenham LAN using a 1GB leased line - a 1GB leased line from Fakenham to Kings Lynn - Connection to the Government secure extranet GCSX is made using a Watchguard firewall and Cisco router - 2 other Extranets are provided to Kings Lynn and South Norfolk using 2 checkpoint firewalls (for fault tolerance) and 100MB MPLS provided by Claranet - The same circuit also provides access to the internet for both NNDC and public access. 20MB are used for internet and 80MB are used for MPLS. This is soon to swapped around so that 80MB is used for internet access - A virtual DMZ is used to provide public access to the NNDC website and services	
Servers	- Virtual servers consolidated on to 6 hosts using up to date version of VMWare	The current server setup represents best practice for server virtualisation

Area of Infrastructure	Current State	Challenges For The Future
	- DataCentre OS licencing allows any number of software instances in virtual operating system environments. SQL Server enterprise 2008 allows any number of virtual operating system environments on one server - Looking to standardise all operating system environments to Windows 2008 and looking at Windows 2012 - Minimal separate physical servers in use - Server estate implemented in 2010 so at least 2+ years before any hardware renewal required - No indication of server performance or capacity issues	• It is also positive that there appear to be no legacy physical servers in use because they could not be virtualised Medium strategy (next 2 years): • retain the current virtual hardware platform for the next 2 years to get full value from it • track VMWare product developments to maximise flexibility and performance from current solution – e.g. simpler provisioning of new servers, clustering across VMHosts, CPU and RAM tuning • review the 88 virtual servers to consolidate where appropriate • look to separate production and non-production workloads where licences allow • migrate server OS to a common / consistent platform where supported by application providers (W2008 R2 / W2012) Longer term strategy: • Evaluate Infrastructure as a service (IAAS) options to migrate server workload to cloud option • Evaluate application provider cloud hosting options Corporate apps e.g. HR and Finance, Line of Business Apps e.g. Civica, and Northgate

Area of Infrastructure	Current State	Challenges For The Future
	Storage is provided for the server clusters at both sites using DELL Equallogic SAN iSCSI storage • Each site has 2 Cisco switches providing an iSCSI SAN Network • For the Cromer office 28.8 terrabytes (TB) is provided, space usage is 50% and I/O (input/ouput) access is at 25% utilisation. • For the DR suit 60 TB of storage is provided • The SAN storage has been purchased and installed between 2009 and 2012 • Using virtualied storage enables the servers to instantiated from SAN which provides an efficient and fast method to restore servers in the event of hardware failure	Comment • The use of iSCSI SAN technology provides consolidation of storage at a good price point. • Current capacity and performance provide plenty of room for growth in the medium term • There is generous capacity provisioned at the DR site allowing for roll back of data to previous versions. • The storage provision is consistent with good industry practice but needs to be balanced with robust information management policies and enforcement • There is a risk that this generous provisioning of storage capacity could be a millstone if it is not managed • In the longer term, storage as a solution should be considered alongside cloud based server hosting.
Endpoints	- 350 desktop PCs in Comer Office – all under 4 years old - 5 workstations in Fakenham office - 50 laptops, 20 Ipads and 100 smartphones - Office 2010 recently rolled out to whole estate - Windows 2007 rollout to be completed within 6 months – licences provided as OEM - Remote access is provided using AEP Netilla and Vasco tokens for 2 stage authentication	• Rollout of Office 2010 and Win7 represents best practice for the industry. • Physical device provision is conventional; many LA's are currently deploying Virtual Desktop (VDI) for ease of management rather than to reduce costs. The cost benefit at NNDC will be limited because most staff are already based

Area of Infrastructure	Current State	Challenges For The Future
	- Looking at possibility of providing Linux virtual environment for home users (boot their PC from linux formatted USB flash drive). This will provide uniform access interface and so remove unwanted set up issues with different operating environments - Smartphones also use Netilla to access NNDC LAN over a secure VLAN - A strategy for remote access is still to be finalised and other investigatory work	in a single building. • Care needs to be taken on desktop licencing as additional Microsoft licences may be needed to support remote working (even if the end user device is not running Windows). • Netilla appears to provide a cost effective and flexible solution for remote access. • A wide scale move away from a Microsoft desktop OS is only viable if the majority of applications have moved to genuine web based clients. • Use a device management tool such as Microsoft's System Centre Configuration Manager (SCCM)
Security	- VLANs are used for eXtranets, and access over the internet or remotely - Access to externally hosted systems such as Northgate, NLIS, Kier and Whitespace are made over VLANs - Checkpoint and Watchguard firewalls and Cisco routers are used for eXtranet and Internet connections - Web filtering is managed using Trustwave Sohpos is used on both endpoint devices and servers for anti virus and email filtering - Disk encryption is made using Sophos - Media encryption for devices such as flash drive is provided using Lumension	• A wide variety of security solutions is in use. • This may provide strength in depth but it also adds complexity for network and device management. • The mix of systems requires additional resource to understand and support them. • Consideration should be given to replacing the current security tools with a common unified threat management (UTM) solution from a single vendor.

Area of Infrastructure	Current State	Challenges For The Future
	- Lumension is also used for server and application patching - AEP netilla and Vasco tokens are used to provide secure remote access - Active directory is used to manage authentication and access rights - Monitoring systems are in place for access logs, storage, network traffic, environment, and databases. Email alerts are in place for the servers and DR suite	

Table 2 – Summary of the Corporate IT Strategy Discovery Phase – IT Infrastructure

(See Appendix C for the review recommendations for NNDC's Technical Infrastructure Roadmap).

Future State

The Corporate IT Strategic vision is to deliver an IT service that places the customer at the centre of all of the IT team developments, priorities and decision making.

They will do this whilst continuously improving value for money throughout their service provision'

Utilising innovations in IT to drive and enable our business strategy'.

The Strategic Objectives driving the delivery of the strategy are:

- Enabling improved and more efficient service through channel shift of services to the web.
- Maximising efficiencies rolling out the Smart office, paperless working, electronic workflow and fact and effective wifi across our offices.
- Enabling more efficient ways of working including mobile working, flexible working (external locations), home working and hot desking
- Supporting the delivery of organisational change and process review working within different models e.g. Shared Services
- Join up IT investments across departments so NNDC maximise any one IT investment
- Supporting commercial opportunities with other organisations should these arise
- Ensuring that during a time of significant transformational change that NNDC IT continue to provide secure and reliable service

The aim of this IT strategy is to build on the investment and innovation to date, setting out the future steps required based upon a model of service engagement for both the customer and our staff leading to progressive improvements in business transformation and efficiency

Appendix B - Glossary of Terms

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Term or Abbreviation	**Definition**
Agile (Project Management)	An agile project is completed in small sections called iterations. Each iteration is reviewed and critiqued by the project team, which may include representatives of the client business as well as employees. Insights gained from the critique of an iteration are used to determine what the next step should be in the project. Each project iteration is typically scheduled to be completed within two weeks. The main benefit of agile project management is its ability to respond to issues as they arise throughout the course of the project. Making a necessary change to a project at the right time can save resources and, ultimately, help deliver a successful project on time and within budget. Because agile management relies on the ability to make decisions quickly, it is not suitable for organizations that tend to deliberate over issues for a prolonged period or for those that take decisions to a committee.
BYOD	BYOD is short for *bring your own device*. In the consumerization of IT, BYOD is a phrase that has become widely adopted to refer to employees who bring their own computing devices – such as smartphones, laptops and tablets– to the workplace for use and connectivity on the corporate network
Citrix	Citrix Systems, Inc. is an American multinational corporation with a focus on software and services specialised in virtualisation and remote access software for delivering applications over a network and the Internet
Channel Shift	This is about moving customer contacts and transactions from more expensive options (telephone, face to face contact, letter) to less expensive options (self-service on the web, self-service through automatic voice recognition systems, and through the use of SMS on mobile phones) - effectively by moving from services which require staff to be involved to those which do not

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Cloud Computing	a style of computing in which dynamically scalable and often virtualised resources are provided as a service over the Internet. Users need not have knowledge of, expertise in, or control over the technology infrastructure in the "Cloud" that supports them Gartner defines three attributes to Cloud Computing: • It is service-based • It is scalable and elastic. I.e., it is able to add and remove infrastructure as needed • It uses shared infrastructure to build economies of scale • It is metered and users pay according to usage • Most importantly, of course, it uses Internet technologies
Client Technology (Thin Client Computing)	The Applications actually Live and Run on Microsoft Terminal Services Servers not on desktop systems: In Thin Client Computing, applications are installed on MS Terminal Services Servers in a central computer room. All application processing is performed on the Terminal Services Server and not the desktop system. This means that only the screen, keyboard and mouse information are passed to the client desktop system. This would mean a significantly lower cost for desktop computer replacement, as the processing of applications would be on a remote server not on the local computer.
CRM (Customer Relationship Management)	Although this is a business philosophy where the customer is central to process and organisational design – in this context it is the application to support customer contact management and workflow
Desktop Standardisation	Where an organisation implements standard corporate office software e.g. MS Office software version, Internet Explorer and MS Operating system version
DR (Disaster Recovery)	Technology to recover live systems if they should have an unplanned failure
EDMS (Electronic Document Management System)	A database with search and indexing allowing us to create a paper file electronically with multiple sections/folders and capable of storing and retrieving email, electronic documents, scanned images and voice files
G-Cloud	UK governments plans to create Cloud Infrastructure. Cloud computing has brought about a step change in the economics and sustainability of Information and Communication Technology (IT). Government is committed to the adoption of cloud computing and delivering computing resources. The G-Cloud is an iterative programme of work to achieve this which

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	will deliver fundamental changes in the way the public sector procures and operates IT. The G-Cloud strategy outlines in more detail how a public sector organisation will: achieve large, cross government economies of scale; deliver ICT systems that are flexible and responsive to demand in order to support government policies and strategies; take advantage of new technologies in order to deliver faster business benefits and reduce cost; meet environmental and sustainability targets; allow government to procure in a way that encourages a dynamic and responsive supplier marketplace and supports emerging suppliers.
Grid Computing	Thus is the combination of computer resources from multiple administrative domains applied to a common task, usually to a scientific, technical or business problem that requires a great number of computer processing cycles or the need to process large amounts of data
H/W	Hardware – desktops, laptops, servers
Hybrid Model	An ICT environment consisting of multiple internal and/or external providers, both Cloud and traditional
ICT	Information Communication Technology bringing together computer hardware, applications, networks and communications disciplines
Information Technology Infrastructure Library (ITIL)	Also known, as Infrastructure Management Service (IMS) is a set of concepts and policies for managing information technology (IT) infrastructure, development and operations. ITIL gives a detailed description of a number of important IT practices with comprehensive checklists, tasks and procedures that any ICT organisation can tailor to its needs. ITIL is published in a series of books, each of which covers an IT management topic. The names ITIL and IT Infrastructure Library are registered trademarks of the United Kingdom's Office of Government Commerce (OGC).
Infrastructure as a Service (IaaS)	Rather than purchasing servers, software, data centre space or network equipment, clients instead buy those resources as a fully outsourced service. The service is typically billed on a utility computing basis and amount of resources consumed (and therefore the cost) will typically reflect the level of activity
Interoperable	Interoperable is a property referring to the ability of diverse systems and organisations to work together
Latency (Network)	Network latency in a packet-switched network is measured either one-way (the time from the source sending a packet to the destination receiving it), or round-trip (the one-way latency

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	from source to destination plus the one-way latency from the destination back to the source). Round-trip latency is more often quoted, because it can be measured from a single point. Note that round trip latency excludes the amount of time that a destination system spends processing the packet. Many software platforms provide a service called ping that can be used to measure round-trip latency. Ping performs no packet processing; it merely sends a response back when it receives a packet (i.e. performs a no-op), thus it is a relatively accurate way of measuring latency. Where precision is important, one-way latency for a link can be more strictly defined as the time from the start of packet transmission to the start of packet reception.[note 1] However, in a non-trivial network, a typical packet will be forwarded over many links via many gateways, each of which will not begin to forward the packet until it has been completely received. In such a network, the minimal latency is the sum of the minimum latency of each link, plus the transmission delay of each link except the final one, plus the forwarding latency of each gateway. In practice, this minimal latency is further augmented by queuing and processing delays. Queuing delay occurs when a gateway receives multiple packets from different sources heading towards the same destination. Since typically only one packet can be transmitted at a time, some of the packets must queue for transmission, incurring additional delay. Processing delays are incurred while a gateway determines what to do with a newly received packet. A new and emergent behavior called Bufferbloat can also cause increased latency that is an order of magnitude or more. The combination of propagation, serialization, queuing, and processing delays often produces a complex and variable network latency profile. Latency limits total bandwidth in reliable two-way communication systems as described by the Bandwidth-delay product
Micro Sites	Individual web sites possibly with their own branding used for communication with segmented client groups
MFD (Multi Functional Devices)	A peripheral that combines printing, scanning and fax capability

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Term or Abbreviation	Definition
MPLS	Short for Multiprotocol Label Switching, an IETF initiative that integrates Layer 2 information about network links (bandwidth, latency, utilization) into Layer 3 (IP) within a particular autonomous system--or ISP--in order to simplify and improve IP-packet exchange. The framework around the private cloud
ODS (Operational Data Store)	A database of key performance data that can be analysed and turned into information. It can be combined (sliced and diced) and many different permutations and combinations
Open Source Software	Software that does not require a licence payment. The supplier generate revenue from support and maintenance and if you upgrade from base level open source to feature rich versions.
Pay As You Go Software	This is a new business model for application software. Whereby you do not licence software but pay a transaction cost for use of the software or a weekly/monthly fee. The Application provider would provide the software upgrades, technical support and user help desk and host the application for the fee paid
Platform as a Service (PaaS)	delivery of a computing platform and solution stack as a service. It facilitates deployment of applications without the cost and complexity of buying and managing the underlying hardware and software layers
Platform Virtualisation	Virtualisation of computers or operating systems. It hides the physical characteristics of computing platform from the users, instead showing another abstract, emulated computing platform
Portal	A Web view (pages or multiple page) use to present information from one or more systems
Private Cloud	Communications network for secure exchange and communication of phone and data run by a private entity
Prince 2 Lite	Prince2Lite is a framework for project delivery, not project management for its own sake. PL does not attempt to deliver project control, rather it is a mechanism for: Project decision making and reporting • should we do this project over that project? • Project progress reporting • should we keep funding this project • are we gaining business value • is the measurable benefit greater than the direct cost
Public Cloud	Government and Nationally available secure networks for the secure interchange of data across the public sector and enabling the procurement of pay as you go software applications
Public Services Network (PSN)	In July 2007, government and industry agreed to work together under the Strategic Supply Board on the solution to this challenge. The resulting vision was of creating 'the effect of a

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	single network across government' – the Public Service Network (PSN) –delivered through multiple competing service providers to ensure ongoing value and innovation. That vision is now being made real through agreed specifications and codes that define PSN and the operation of the PSN marketplace. PSN will eventually replace the many different networks across the UK public service with a common 'network of networks', in effect an internet for the public service, but with the security and resilience that government needs. The PSN represents a competitive marketplace for interoperable services, not a single big procurement. Led by the Cabinet Office, PSN sets the standards and codes that both suppliers and users need to comply with. Users can then choose between services from competing suppliers in the knowledge that they will interconnect, creating the effect of a single network between public bodies.
SAN	Storage Area Network – shared storage device for use within virtualised service environment
S/W	software applications, such as MS Office, exchange or Salesforce
Scaleable	A popular buzzword that refers to how well a hardware or software system can adapt to increased demands. For example, a scalable network would be one that can start with just a few nodes but can easily expand to thousands of nodes. Scalability can be a very important feature because it means that you can invest in a system with confidence you won't outgrow it.
Service Oriented Architecture (SOA)	provides a set of principles of governing concepts used during phases of systems development and integration. Such an architecture will package functionality as interoperable services: functions provided as a service are available to be used from systems created by other organisations
Service Provider	Is a business that provides computer-based services to customers over a network. Software offered using an ASP model is also sometimes called On-demand software or Software as a Service (SaaS)
Service Recalibration	Reviewing and renewing our service provision and design in response to new demands and service level expectations raised by our customer e.g. Changing a 4 day response to 4 hours or less
SFIA	The Skills Framework for the Information Age (Pronounced Sophia) is a model for describing and managing competencies for ICT professionals for the 21st century, and is intended to help match the skills of the workforce to the needs of the business.[1] It maps out the range of skills as a two-dimensional table, by tagging each skill with a category and responsibility

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	level. These categories are divided into six main areas: Strategy and planning; Business change; Solutions development and implementation; Service management; Procurement and management support; and Client interface. Each of these is then further divided into sub-categories (see below), mapping out 86 separately identifiable skills. Each of these skills has a general description. There are seven levels of responsibility, in ascending order: Follow; Assist; Apply; Enable; Ensure and advise; Initiate and influence; and Set strategy, inspire and mobilise. Each of these responsibility levels has a generic description showing the level of autonomy, influence, complexity, and business skills required.
SIP (Telephone Trunking)	Session Initiation Protocol (SIP) trunking is the use of voice over IP (VoIP) to facilitate the connection of a private branch exchange (PBX) to the Internet. In effect, the Internet replaces the conventional telephone trunk, allowing an enterprise to communicate with fixed and mobile telephone subscribers worldwide. (SIP is an IETF standard for initiating interactive multimedia user sessions; a trunk is a line or link that can carry many signals at once, connecting major switching centers or nodes in a communications system.) In order to take advantage of SIP trunking, an enterprise must have a PBX that connects to all internal end users, an Internet telephony service provider (ITSP) and a gateway that serves as the interface between the PBX and the ITSP. One of the most significant advantages of SIP trunking is its ability to combine data, voice and video in a single line, eliminating the need for separate physical media for each mode
Software as a Service (SaaS)	a model of software deployment whereby a provider licenses an application to customers for use as a service on demand. SaaS software vendors may host the application on their own web servers or download the application to the consumer device, disabling it after use or after the on-demand contract expires
Storage as a Service (StaaS)	Storage as a service – as above but related to storage of data
Server Virtualisation	Utilising one fixed server so that it mimics several servers so that you can run several applications/utilities on that server without them have an adverse impact on each other

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Total cost of ownership (TCO)	a financial estimate. Its purpose is to help consumers and enterprise managers determine direct and indirect costs of a product or system. In this project, TCO is used to understand a more complete cost of owning and operating software applications in order to create an "apples to apples" comparison between traditional and SaaS applications
Utility Computing	Is the packaging of computing resources, such as computation and storage, as a metered service similar to a traditional public utility (such as electricity, water, natural gas, or telephone network). This system has the advantage of a low or no initial cost to acquire hardware; instead, computational resources are essentially rented. Customers with very large computations or a sudden peak in demand can also avoid the delays that would result from physically acquiring and assembling a large number of computers
Unified Threat Management (UTM(	Unified threat management (UTM) is a comprehensive solution that that recently emerged in the network security industry, and since 2004 it has gained widespread currency as a primary network gateway defense solution for organizations.[1] In theory, UTM is the evolution of the traditional firewall into an all-inclusive security product able to perform multiple security functions within one single appliance: network firewalling, network intrusion prevention and gateway antivirus (AV), gateway anti-spam, VPN, content filtering, load balancing, data leak prevention and on-appliance reporting
Virtual machine (VM)	a software implementation of a machine (i.e. a computer) that executes programs like a real machine
Virtualisation	a broad term that refers to the abstraction of computer resources
VLAN (Virtual Local Area Network)	In computer networking, a single layer-2 network may be partitioned to create multiple distinct broadcast domains, which are mutually isolated so that packets can only pass between them via one or more routers; such a domain is referred to as a Virtual Local Area Network, Virtual LAN or VLAN. This is usually achieved on switch or router devices. Simpler devices only support partitioning on a port level (if at all), so sharing VLANs across devices requires running dedicated cabling for each VLAN. More sophisticated devices can mark packets through tagging, so that a single interconnect (trunk) may be used to transport data for various VLANs. Grouping hosts with a common set of requirements regardless of their physical location by VLAN can greatly simplify network design. A VLAN has the same attributes as a physical local area network (LAN), but it allows for end stations to be grouped together more easily even if they are not on the same network

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	switch. VLAN membership can be configured through software instead of physically relocating devices or connections. Most enterprise-level networks today use the concept of virtual LANs. Without VLANs, a switch considers all interfaces on the switch to be in the same broadcast domain.
VoIP (Voice Over Internet Protocol)	Normally used in the context of a VoIP phone system. Aligns with the capability to have phone numbers that are not fixed to desks and where communication and data is transmitted over the single network
VPN	A virtual private network (VPN) is a network that uses a public telecommunication infrastructure, such as the Internet, to provide remote offices or individual users with secure access to their organisation's network. A virtual private network can be contrasted with an expensive system of owned or leased lines that can only be used by one organisation. The goal of a VPN is to provide the organization with the same capabilities, but at a much lower cost.
Web 2.0	The term "Web 2.0" (2004-present) is commonly associated with web applications that facilitate interactive information sharing, interoperability, user-centered design, and collaboration on the World Wide Web

Appendix C – SOCITM IT Technical Infrastructure Roadmap

The key focus of the review in June 2013 was to report on the state of the infrastructure and to identify any gaps that need to be addressed. The main findings were:

B1 The outcome of the review is that the estate is very well provided for with no significant 'gaps'.

B2 The NNDC ICT infrastructure is well provisioned and can provide the capacity, resilience and scalability required for at least the next 2 years and likely longer.

B3 The staff has an excellent range of skills including network configuration and management, database administration, telephony and web development; all skills that are needed to enable the council to achieve its vision of 2013-2016.

B4 SOCITM recommended that NNDC continue with the work in progress to complete the server virtualisation and new DR suite and continue to monitor and implement best practice to gain the best value from their investment.

More detailed recommendations for the IT infrastructure roadmap going forward are broken down into the short, medium and longer term.

In the short term (the next 2-3 years) they recommend that NNDC:

- Retain the current virtual platform and continue with the work in progress to complete the server virtualisation and new DR suite and consider clustering the servers to provide improved load balancing of data and applications

- Continue to monitor and implement best practice to gain the best value from their investment including investigating running the DR suite in an active/active configuration, where load balancing is used to optimise and manage access to all resources but enables the DR suite to take over in the event of a complete failure of the Cromer site

- Consider a VoIP and unified communications platform such as Microsoft Lync. Whilst there is no significant cost benefit, a lack of VoIP and digital channels (e.g. web chat, automated voice responses) could be limiting flexible working

- Look at rationalising supply provision and possibilities such as UTM (unified threat management)

- Continue with development of remote working with a view to increasing hot desking and reduction in permanent office space

In the medium term:

- Technologies will begin to change as the market becomes more confident and orientated around cloud technologies. NNDC needs to evaluate and prepare for infrastructure as a service (IAAS) and systems as a service (SAAS), using the experience of other districts and councils to assist in the decisions going forward. In particular, consideration needs to be given to:
  - o cloud based server hosting, storage and hosted backup which will enable
  - o decommissioning the DR suite in 5 -10 years time
  - o cloud hosting for corporate applications such as HR, finance and payroll; and

- - cloud hosting for the business lines i.e. Civica, Northgate and IDOX
  - consider using cloud based office productivity tools (e.g. Microsoft Office 365 or Google Docs) which enable users to access applications from the cloud as they need them, gradually moving away from a Microsoft based desktop to web based client access and increasing the choice of endpoint devices to be used

In the Longer term 5-10 years from now:

- Localised data storage will mature with business data becoming routinely stored and provided from 'virtual' data centres and it would not be unreasonable for NNDC to plan for having no localised data storage

- Reduce NNDC reliance on proprietary software by using software as a service (SAAS)
- Work with County and other local authorities to leverage economies of scale (EoS) by stimulating and developing cloud partnerships

In Summary the main recommendations for NNDC going forward are:

- Prepare for emerging cloud technologies such as SaaS and HaaS and use the experience of other districts and councils to assist in the decisions going forward
- Look at rationalising supply provision and possibilities such as UTM (unified threat management)
- Continue with development of remote working with a view to increasing hot desking and reduction in permanent office space