REPORT OF THE SERVICE DIRECTOR, ICT

DATA CENTRE MODERNISATION (CLOUD) PROGRAMME UPDATE

Purpose of the Report

1. To provide Members with an update on the progress with the Cloud Services Programme.

Information and Advice

Background

2. The County Council's ICT Strategy 2017-20 sets out the technology direction of travel and the key work programmes supporting its delivery. This includes the transition away from owning and operating a data centre and all of the associated infrastructure (servers, storage, switches, racking, power, air conditioning etc.) with a move to using off-site data centres, commonly referred to as *cloud* services. Funding to support this was approved by Policy Committee in December 2016.

3. The County Council's ICT infrastructure is vital in supporting many of its services to run effectively. There are some 600 different systems that are used daily with more than 11,500 connecting devices accessing them (desktops, laptops, tablets and smartphones). Systems are run on different operating systems (e.g. versions of Windows, AIX) and many have interfaces enabling data to transmit between them. There is secure storage of all of the data and back-ups and there are many technology interfaces with external organisations. Secure access to the web is provided and all of the infrastructure is compliant with Public Services Network standards (PSN).

4. The County Council currently has its own data centre at County Hall and the current model of delivery relies on the County Council purchasing all of the infrastructure within it and having a cyclic 5 year replacement programme so that it remains current and fit for purpose.

5. As an alternative, there are several models of cloud service delivery available (some are described later in the report) and these incorporate a supplier providing the data centre, the infrastructure within it and sometimes the applications and services themselves. The industry trend is towards cloud service models.

6. ICT Services has increasingly been making use of cloud services over the last 4 years. Through our business continuity arrangements we already have some 20% of our infrastructure in a private sector data centre at Derby (Node 4). Applications currently provided through other cloud solutions include, as examples, Microsoft Office 365 e-mail

and calendar services used by Inspire and VIA, plus the software solutions used for electronic forms and customer contact services.

7. Although the current data centre model has worked effectively, now is a good time to progress to a full cloud model for the following reasons:

- Major investment will be required over the next 3 years to update the current ICT equipment within the County Hall data centre as it increasingly reaches obsolescence.
- The data centre environment itself is ageing and will require investment to maintain it.
- Annual costs of the current model are rising as suppliers increase their costs by more than inflation.
- The current infrastructure costs are very difficult to reduce even if the service usage shrinks, as we are tied to a physical infrastructure which we own. This lack of flexibility becomes more of an issue as services (such as VIA, Inspire) exercise more choice and as the operating model of the County Council changes.
- The ongoing programme of upgrades to keep the current infrastructure up to date is resource intensive and expensive.
- Reductions to ICT staffing were made in April 2017 in anticipation of moving to cloud service models.

Progress to date

8. There are 5 phases to the Cloud Services Programme, summarised below:

Phase 1 (discovery)	The discovery phase assesses the cloud options, produces the business case, makes recommendations and starts the activity to optimise the current ICT environment in readiness for a cloud model.
Phase 2 (requirements)	The requirements phase identifies the full set of services and outcomes required from a cloud service model in readiness for procurement.
Phase 3 (procurement)	The procurement phase approves the cloud solutions and providers, and establishes plans and contracts.
Phase 4 (design & build)	Following contract completion, the design & build phase involves the supplier in fully identifying infrastructure requirements, designing and building the new infrastructure and confirming transition plans.
Phase 5 (implementation)	The implementation phase is the transition to go-live from the cloud service provider, followed by the decommissioning of current services.

9. The Cloud Services Programme is overseen by a governance board and each phase is approved with the involvement of the Corporate Director (Resources). The programme is now reaching the end of phase 2.

10. As part of phase 1 a business case has been developed for the Cloud Services Programme and was presented to Policy Committee in December 2016. A full scan of the existing ICT infrastructure has been undertaken to identify all applications, hardware solutions and system interfaces that we have. This information is being used to identify the most appropriate cloud solutions and any preparatory activities in readiness for the transition e.g. *virtualising* more applications to run on shared hardware rather than their own hardware (this reduces hardware requirements and makes transition to cloud easier), consolidating the numbers of servers that are required and re-sizing the infrastructure requirements (e.g. memory and CPU usage) so that we do not over specify needs.

11. There are a range of cloud service models available and it is anticipated that our initial approach could incorporate the following mix:

Co-location model	There is some ICT infrastructure that we would need to retain and so we would rent space at a service provider data centre to co-locate this equipment there.
Private cloud model	Some of our existing services could be hosted in a dedicated (private) environment at a service provider data centre(s). The infrastructure would be provided, supported and managed by the supplier, but existing arrangements for supporting the applications themselves would continue. Our internet connectivity could also be provided out of this facility.
Multi-Tenant Infrastructure as a Service (IaaS)	This would be a secure set of servers sitting within an approved supplier environment servicing the needs of multiple customers including the County Council. This would be used to provide us with the ability to flex up and flex down as demand changes. This is an ideal landing place for development environments (used for testing and developing systems prior to go-live), short term projects or services with an uncertain future.
Public cloud model	The service provider makes applications and storage available over the internet e.g. Microsoft Azure. This is best suited to services that have minimal security requirements and present us with minimal risk.

The exact cloud models used will be determined as part of the procurement phase and will change over time as technology, pricing and business priorities change.

12. A Cloud Services Manager role was approved in September 2017. This role will help ensure that we can properly prepare for and transition to a cloud service model of delivery.

13. The identified benefits of moving to a fully cloud services model include:
    - Only paying for the infrastructure and services that you use.
    - Flexibility to quickly grow or shrink the ICT estate.
    - The ongoing programme to upgrade and replace ICT infrastructure as it becomes obsolete is significantly reduced as this becomes the responsibility of the cloud supplier.
    - Based on our discovery activity with 6 cloud service suppliers there are estimated to be financial benefits from adopting this model.
    - It becomes easier to identify costs down to the level of business units enabling more transparency, and potentially a re-charging model.
    - As an early adopter of such a model we could negotiate with the provider a commercial arrangement for any future contracts they gained using the methodology adopted as part of this framework arrangement.

14. There are also risks associated with moving to a fully cloud model:
    - The cloud delivery market is still maturing and subject to change as suppliers vie for business.
    - There is significant reliance on a cloud supplier for service availability and upgrades, necessitating stringent contractual and service level management.
    - There are few examples of a local authority putting all services into a cloud model.
    - The process of transitioning to cloud services presents a risk to service continuity and integrity.
    - There are security and interoperability considerations within a cloud model, but we have some experience of these with our current use of a second data centre.
    - There is always a risk of unplanned price increases.

15. At this stage it is anticipated that a go-live date in 2019 could be achieved but this will become clearer as the phases progress.

Financial Implications

16. The actual cost of moving to and operating a cloud services model will not be fully known without a procurement exercise and having fully transitioned to the new delivery model. Reasonable estimates based on soft market testing identified capital investment of £4.1million to support the transition over a 3 year period (year 1 £1.550m, year 2 £1.750m, year 3 £800k). This is to establish and transition to a cloud service model and for the estimated parallel running costs, and this has been incorporated into the capital programme following Policy Committee approval. The business case identified that the cumulative cost of moving to a cloud model becomes lower within 3 years.

17. As part of the ICT Services re-structure in April 2017, staffing levels were downsized to reflect a smaller ongoing infrastructure replacement programme as we transition away from data centre ownership. Through the Cloud Services Programme further savings of £50k in 2019-20 and £200k in 2020-21 are proposed for inclusion within the medium term financial plans. This is to reflect some network cost savings from a greater take-up of Skype for Business for telephony, plus a revamp of resource requirements, supplier

contracts, use of contractors, processes and technology use once the cloud services models of delivery have been implemented.

Other Options Considered

18. The option of continuing with the current data centre model has been considered but is not cost effective in the medium term as identified above.

Reason for Recommendation

19. To update the committee on the work towards a full Cloud service model.

Statutory and Policy Implications

20. This report has been compiled after consideration of implications in respect of crime and disorder, data protection and information governance, finance, human resources, human rights, the NHS Constitution (public health services), the public sector equality duty, safeguarding of children and adults at risk, service users, smarter working, sustainability and the environment and where such implications are material they are described below. Appropriate consultation has been undertaken and advice sought on these issues as required.

RECOMMENDATION

It is recommended that:

1) Members agree to receive an update report in 6 months' time and consider what further action they wish to take.

2) The financial savings proposals of £50k in 2019-20 and £200k in 2020-21, set out in paragraph 17 of the report, are incorporated into the Medium Term Financial Strategy.

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Constitutional Comments (EP 10/10/2017)

The recommendations fall within the remit of the Improvement and Change Sub-Committee by virtue of its terms of reference.

Financial Comments: (RWK 09/10/2017)

The financial implications are set out in paragraphs 16 and 17 of the report. Funding of £4.1M has been included in the existing Capital Programme to meet the estimated capital investment costs of moving to and operating a cloud services model. The report also proposes additional financial savings of £50,000 in 2019-20 and £200,000 in 2020-21.

Background Papers

None

Electoral Division(s) and Member(s) Affected

All