Azure migration

Full Business Case

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Approvals
This document has the following approvals:

Name	Job Title	Date of Approval	Version Approved
Steve Jennings	Team Manager – Security and Infrastructure		3.0
Maryvonne Hassall	ICT Manager		3.0

Distribution
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Executive Summary

Epping Forest District Council (EFDC) digitisation strategic plan includes standardising its infrastructure and services to a cloud first strategy. As such this project will create a cloud platform that supports the longer-term digital ambitions of the council.

This will be a secure, scalable operating platform that will provide flexible capacity as requirements change and more cloud native business services are introduced.

This aligns with Gov.uk advice when procuring new or existing services, public sector organisations should consider potential cloud solutions first before considering any other option. This approach is mandatory for central government and strongly recommended to wider public sector.

The project will migrate a discrete set of EFDC servers and business services that have been identified from a recent review the council has completed. Please note the final list of these servers will be confirmed through the project initiation stage.

So instead of using physical resources and an in-house data centre the 'cloud' refers to services that are hosted on or run-on internet servers, supported by external vendors. Most of the current in-house estate operates an array of different support models, technology, and warranties with varied operational support.

In the appendix of this report there is a summary comparison between the cost of implementing a solution based on Microsoft Azure against the cost of an equivalent implementation in Google.

Azure is £62,880 per annum less than the equivalent costs from Google as this solution would require

a) Additional servers to be maintained (we would still need to maintain Microsoft Domain controllers)
b) An additional FTE to support the Google solution
c) Additional professional fees to support the Google solution

Problem Statement

EFDC currently provides the majority of their IT requirements from the Civic Office Computer Suite (on-premise). The infrastructure is at various levels of standardisation and support.

EFDC is not up to date against modern norms, including infrastructure asset provisioning and sizing, automation or standardisation and has varied operational support standards. Moving some services to Microsoft Azure cloud computing will ameliorate a number of these issues.

EFDC's current environment isn't able to easily auto-adjust to business needs; capacity isn't easily optimised; it doesn't provide easy planned refresh cycles and doesn't easily address environmental considerations.

EFDC want the operational and technical capability to deliver on-demand availability of infrastructure resources, without direct local management of the physical or virtual assets. They want to deliver an on-demand infrastructure service which will be well maintained, secure and reduce the total cost of ownership, with reduced ongoing support and operational overheads with automation.

This approach will enable the council to reduce the footprint of services that are provided in-house, reduce floorspace coverage, power consumption and maintenance. Cloud services provide additional advantages for digital transformation, including a reduction in the time to deploy infrastructure and a significant reduction in emissions.

Current setup

EDFC's current setup:

- Server infrastructure is virtualized with just over 200 servers (mainly virtual) spread across 12 VMWare hosts currently located in a council building.
- There is a physical network in place and a small number of remote sites along with public and private wifi access in places.
- Disaster recovery is catered for via replication to an offsite provider (Zerto) with a 4 hour recovery time.
- Underlying software platforms (OS, databases) are primarily Microsoft- Technology based
- Applications (website, management systems, etc.) are generally off the shelf and those that are generally maintained by third parties.
- Staff accounts are in active directory, with Office 365, exchange for email and MS Teams
- Staff are generally equipped with a laptop currently and some may have a phone. There is still the limited use of some desktops and virtual desktops (citrix).
- There is a call centre system in place, for the councils day to day operations.
- Staff are working remotely primarily, and this is likely to be an ongoing requirement due to building changes.

Options considered

With many companies and local authorities moving to cloud solutions for their IT requirements EFDC decided to commission an options paper in January 2021 via Methods.

Options considered for this work are included on the following page with ***Hybrid Public Cloud*** the chosen solution.

	Internally Provided	Externally Provided
Internally Managed	**Do Nothing** Continue with existing infrastructure without upgrade Key Red (con), Green (pro) • Requires ongoing replacement of hardware • key servers are out of support Q1 2022, and software licences will require renewing in January and April 2021 • Increasing risk position in relation to its IT estate.	**Full Public Cloud** Implement a full public cloud and migrate all service to this cloud • Will result in initial infrastructure that is ill suited to cost effective running in the cloud • Delivers all the cloud benefit
	Recommission Infrastructure Replace like for like, migrate all content onto replacement infrastructure • Little disruption • No staff retraining • Low risk approach • Locked into current infrastructure for longer than maybe desired • Lacks resilience and flexibility • Over spec'ed hardware to cope with peaks • Limited options to embrace new demands (users, software) • Little cost savings or improvements not realised • Current risks not mitigated	**Hybrid Public Cloud (chosen option)** Hybrid cloud model consuming both premise and cloud based services • Provides resiliency, reliability, adaptability, potential cost savings, latest infrastructure. • Most flexible • Follows Government guidance on cloud first • Allows for a gradual rollout • Flat pricing and predictable costs • Reduced physical infrastructure • Improved monitoring • High hardware refresh rate • Possible early results (servers migrated within months) • Aligns with SaaS offerings • Upskilled staff (also an advantage) • Cost in dual running phase during migration will be higher • Reliant on a single supplier.
		Convert DR services to Live Convert the existing web based DR provision to become the new cloud environment • Does not match the products offered by the supplier of the current Disaster Recovery platform
Externally Managed		**Shared Infrastructure** Seek a partner organisation(s) to share services and infrastructure with. • Considered in the future when EFDC has a mature, modern and efficient infrastructure • Potentially lower cost including shared staff • Disadvantages of in-house solution • High risk of large costs if partners remain committed • Shared cost model unknown • Previous initiatives elsewhere failing to gather interest

Project Scope

The scope of this project is summarised as follows:

1. Discovery Update – A 2-week discovery update to refresh the current application stack database and clarify any changes to the server configuration or server count (currently understood to be 47 Servers).
2. In conjunction EFDC undertake requirements capture exercise to validate the findings of the discovery update and confirm programme scope.
3. Production of High- and Low-Level Designs for the new Azure Tenancy
4. Production of Migration and Test Strategies for programme
5. The **build of a new Azure Tenancy and Landing Zone** in line with the current Agilisys Technical Reference Architecture.
6. In collaboration with EFDC assess any **changes to network connectivity** and the server architectural sizing as the servers are migrated to cloud.
7. **Azure migration -** synchronize and cutover 47 servers into the Epping Azure Tenancy.
8. **Identify opportunities to rationalise and consolidate** server and storage volumes, thereby reducing the running cost of the cloud-based services.
9. Successful handover into service of these Line of Business (LoB) services.

Objectives

Area	Description
1. Project kick off meeting	A kick-off meeting with all parties to support understanding of the SoW including deliverables, roles and responsibilities, resourcing, plan, initial risks, issues, and assumptions.
2. Capture Requirements	Sessions to gather and validate requirements which will be used in the hosted environment design documents. These requirements will define the Azure environment to be built and incorporate any specific foundation services required by the applications (as listed in the playback report from the previous SoW) in scope for migration. This includes the capturing and delivering against the education and training needs of support staff
3. High-Level Design	Publication of an HLD summarising our standard reference architecture, Managed Service tooling and process. Approval of a High-Level-Design document that details the Azure tenancy, updated core services and network interconnect for EFDC.
4. Solution Low-Level Designs	Development and approval of the Low-Level Design documents that fulfils the solution defined in the HLD.
5. Deployment and Migration Approach	Development and approval of the Deployment and Migration Approach for in scope services, and migration phasing plan detailing schedule of Go-Live Cutovers.
6. Test Strategy	Development and approval of the Test Strategy which covers the Azure environment build and application migration (Test Plans will be delivered post LLD approval and contain the scripts to be executed and will be a deliverable in the Build and Test Phase).
7. Solution Design Walkthrough	A workshop to present the end-to-end design to stakeholders in support of understanding prior to build out. Note, this is for EFDC awareness, not approval.
8. Environment Build	The build of a new Azure environment for EFDC based on the Agilisys Technical References Architecture documentation and design.
9. Environment Test & Acceptance	Testing and acceptance into service of the uplifted Azure environment. UAT testing as per agreed plans

Area	Description
10. Line of Business (LoB) Migration	Migration of the LoB applications and business services along with their handover into an Agilisys Managed Service (subject to Contract change control).
11. Close Project	Closure of SOW following agreed project management practices

EFDC and Agilisys will work together to identify any potential applications and determine the most effective hosting platform. Any application that is not supported in cloud, would not be cost effective to migrate or, for any other reason will not be migrated to cloud but requires an ongoing hosting solution will be handled through a Contract change control.

Changes to the volumes included in the baseline scope or the design, or migration to alternative platforms will be agreed by Contract change control.

Out of scope

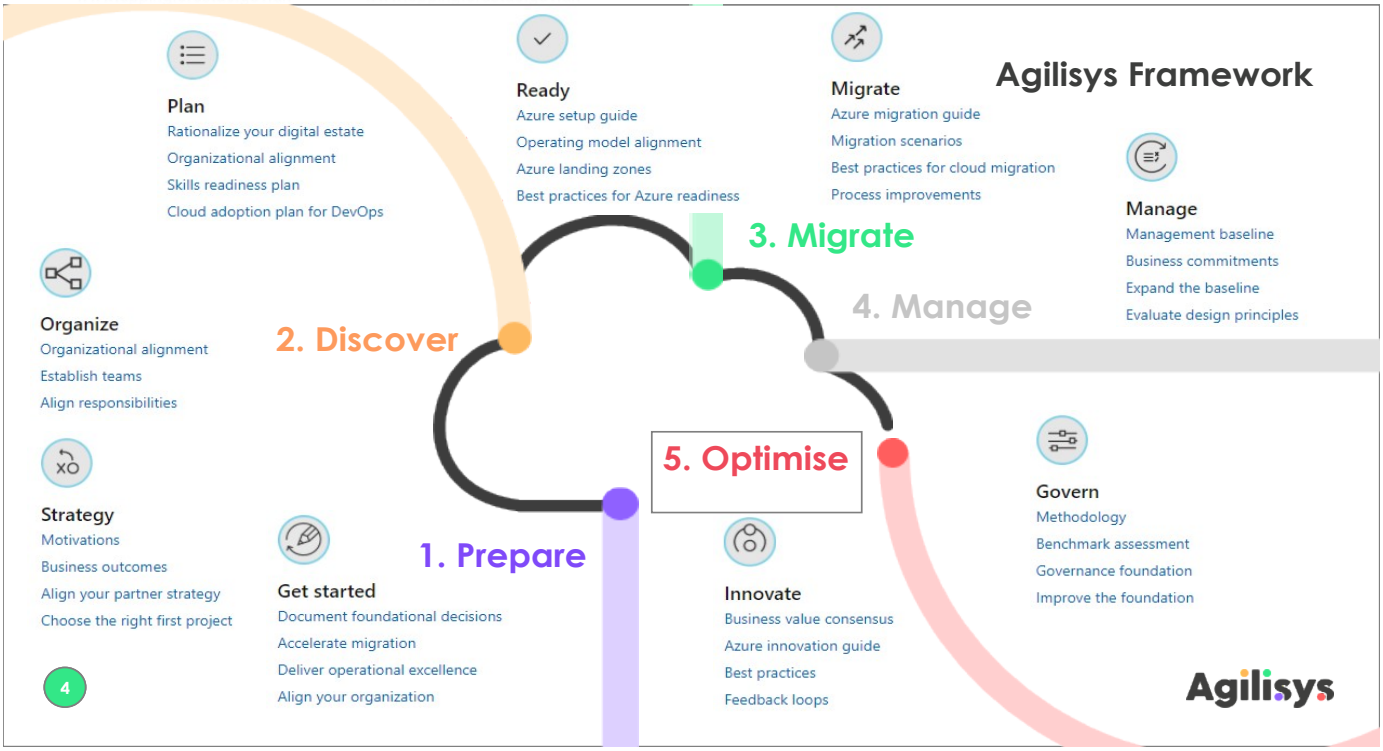
- New Service/Server (asset) request process
- Asset Management process
- Asset refresh (upgrades/remediation for migrated services)
- Application Upgrades for orphaned products (products not in the ICT ownership)
- Documentation of Business Services
- Documenting the over arching cloud strategy for Government organisations
- Realising the benefits of buildings capex reductions

Project Approach

The Methods Infrastructure Options Paper recommended engaging a Microsoft Gold Partner to assist with the migration to Azure and the project team has been working with Agilisys as they have a vast amount of experience migrating Local Authorities to Azure and were therefore considered to be an ideal Partner.

Agilisys have taken the server data provided by the EFDC IT team and used this to produce an estimate of total costs to both migrate the identified servers to Azure and the running costs for these servers.

The Agilisys framework is described as follows



Project Objectives

The Key objectives of this project are as follows:

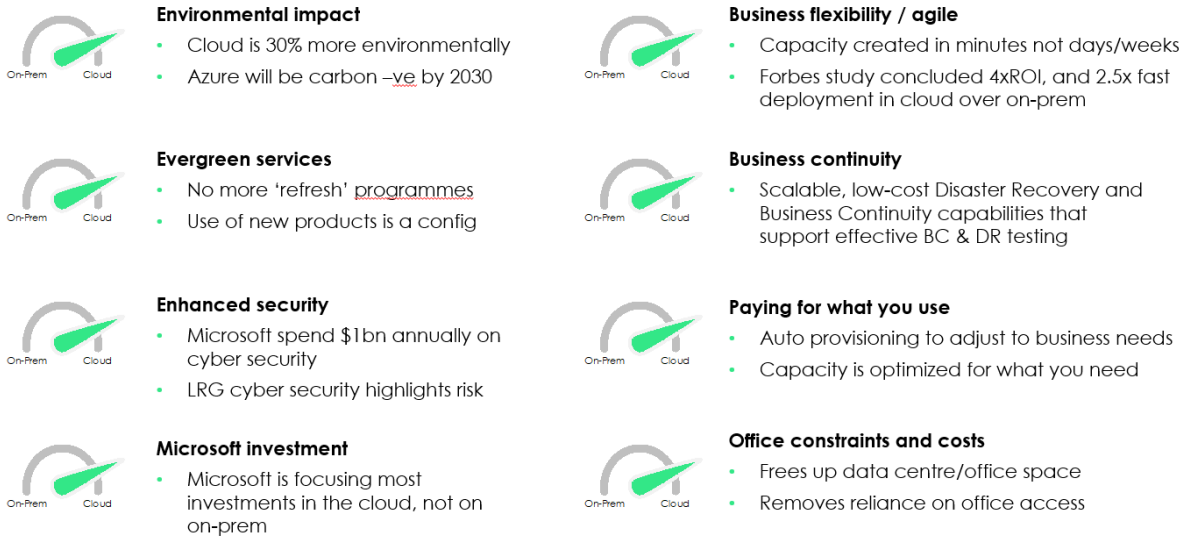
- Reduce cost through efficient usage of resources
- Improve reliability of IT services
- Increase flexibility and Saleability of IT infrastructure
- Improve Security
- Simplify Support

Benefits and Outcomes

The benefits and outcomes of this project will be:

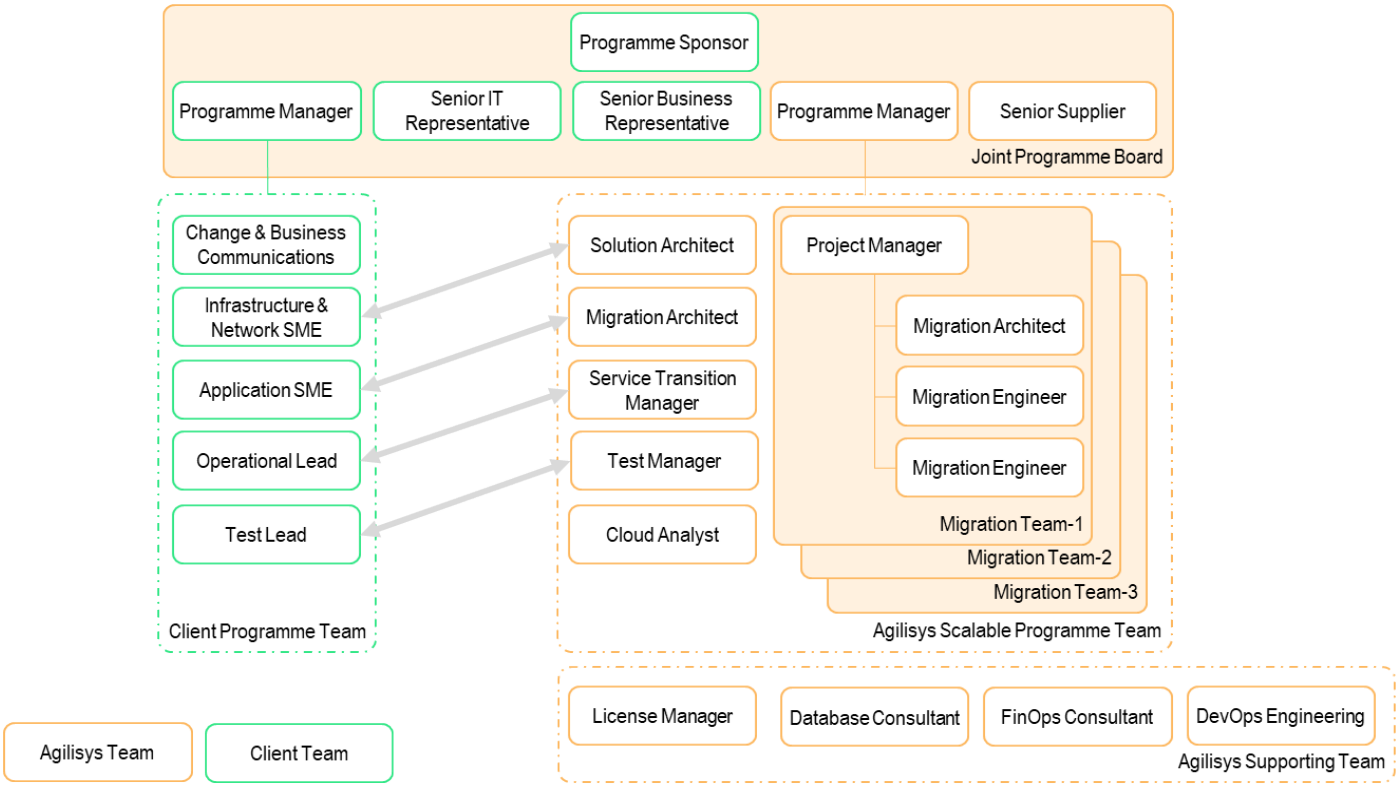
- Reduced physical infrastructure, avoiding ongoing continual upfront investments to infrastructure
- Regularly refreshed hardware infrastructure
- Follows government guidelines of Cloud first
- Predictable reduced costs. Capgemini estimate RPA can yield savings of around 17% in most industry sectors.
- Established frameworks, migration approaches, and wide support
- Infrastructure is easily maintained as code, allowing for fast changes
- Greatly improved monitoring
- Reliability, Backup, Failover & Recovery: On average, 6% of workers time is lost to ICT Failures related to slow running systems, connection failures and outdated systems. By moving to the public cloud, reliability is dramatically improved with redundant infrastructure and management as standard, and access provided across the Internet.
- Innovation, Scale & Flexibility: New cloud-based technologies create improvement in service delivery and operational efficiency. Only pay for the cloud resources used, allowing rapid prototyping of new services and scaling up, and down, to meet demand. Improves budget reliability, removing the need for periodic hardware refresh.

- Cyber Security & Compliance: The scale and scope of cyber attacks, and the rate of incidence, is increasing. Public Cloud has specialist security tools and automated monitoring and alerting that is far superior to on-premises solutions.
- Microsoft invest over $1bn every year in cyber security research, constantly improving the security services available on Azure.
- Environmental: Public Cloud is 93% more energy efficient, and 98% more Carbon efficient than on-premises data centres, with strong commitments to 100% renewable energy, water positive and zero waste. Sustainability calculators help organisations to track Scope 3 emissions effectively.



Roles and Responsibilities

A typical project organisation diagram for this project is indicated below.



Resources

For EFDC this means providing the following resources:

Project Lead	• Support coordination of client internal staff. • Support any client CAB or other related processes.
Network/Security Administrator	• Implement any required network changes across the EFDC IT estate. • Advise with local knowledge and support the timely resolution of any issues encountered during the period of the project lifecycle.
Server Administrator	• Provide server access credentials required across the EFDC IT estate. • Advise with local knowledge and support the timely resolution of any issues encountered during the period of the project lifecycle.
Application & Infrastructure SME's	• Input from client on Software grouping of servers, this will be to enable meaningful naming of Application Stacks

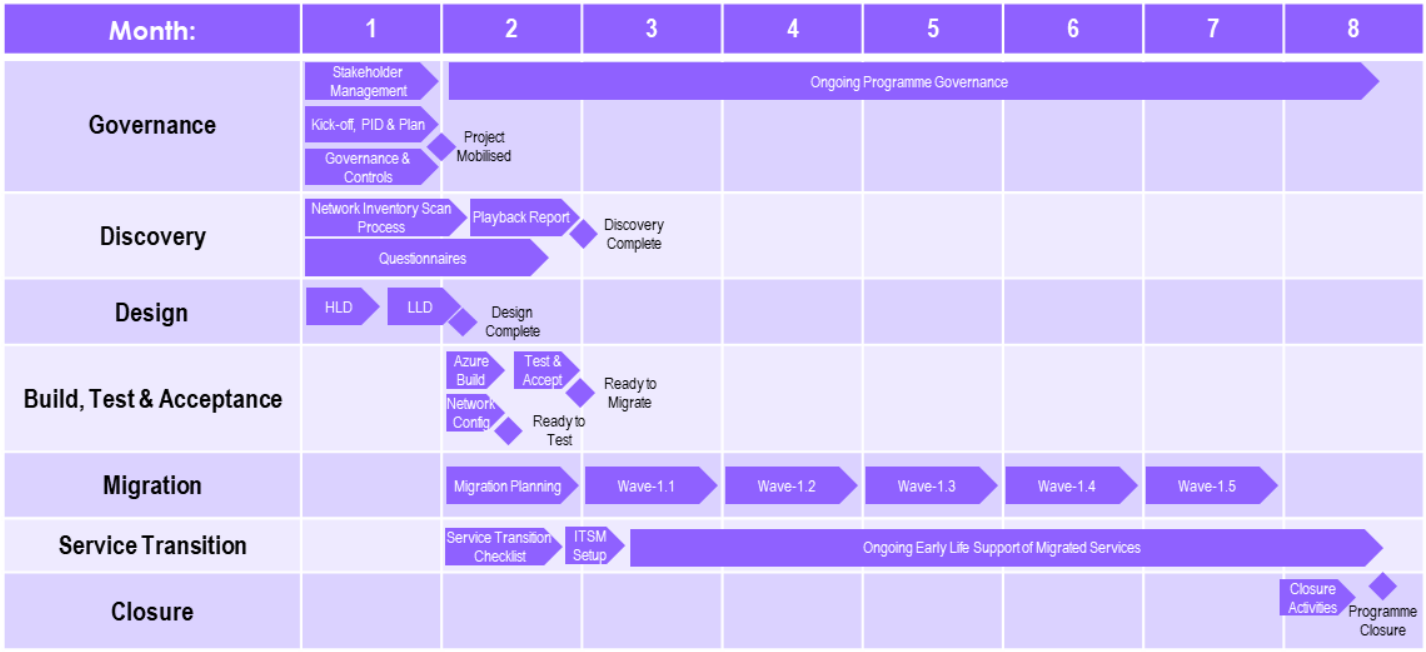
Dependencies

1. A list of dependent Applications will be created during the discovery phase of the project to identify support, ownership and signoff criteria.
2. The EFDC tenancy via Agilisys CSP agreement will be established in the initial stages of the project. As part of the Tenancy set up process, EFDC are required to sign the Microsoft Customer Agreement.
3. Provision in a timely manner (normally within 3 working days of notice) of relevant EFDC resources for workshops, meetings, testing and delivery activities, stakeholder support and sponsorship to ensure the success of the project
4. Resources to support the delivery of a Statement of Works (ICT personnel with EFDC infrastructure & SME application knowledge and ability to determine which systems are associated with groups of servers).
5. Timely access to information, including access to existing documentation in the first week to enable the work to be carried out as set out in this statement of work.
6. Manage timely Change Requests to support the successful implementation and execution of the discovery exercise.
7. Hosting environment for the certain migration tooling where it is required.
8. Completion / sign-off of application upgrades, prior to migration to Azure.
9. Further access or support the interrogation of any systems as may reasonably be required to enable Agilisys to complete the discovery exercise.
10. A minimum of 1Gbps network connectivity will be provided into Azure.
11. Project governance and local team resource requirements will be managed and controlled aligned to existing Epping IT processes.
12. EFDC will provide the test resource and complete the user acceptance testing in accordance with the planned timescales
13. EFDC will create the communications strategy and the end user communication materials prior to the pilot
14. Document reviews will be undertaken by EFDC within a timely manner. One round of agreed updates will be undertaken before the artefact shall be deemed as accepted. Changes beyond this will be subject to Contract change control. It is assumed that this process to sign off will take no more than 1 week.

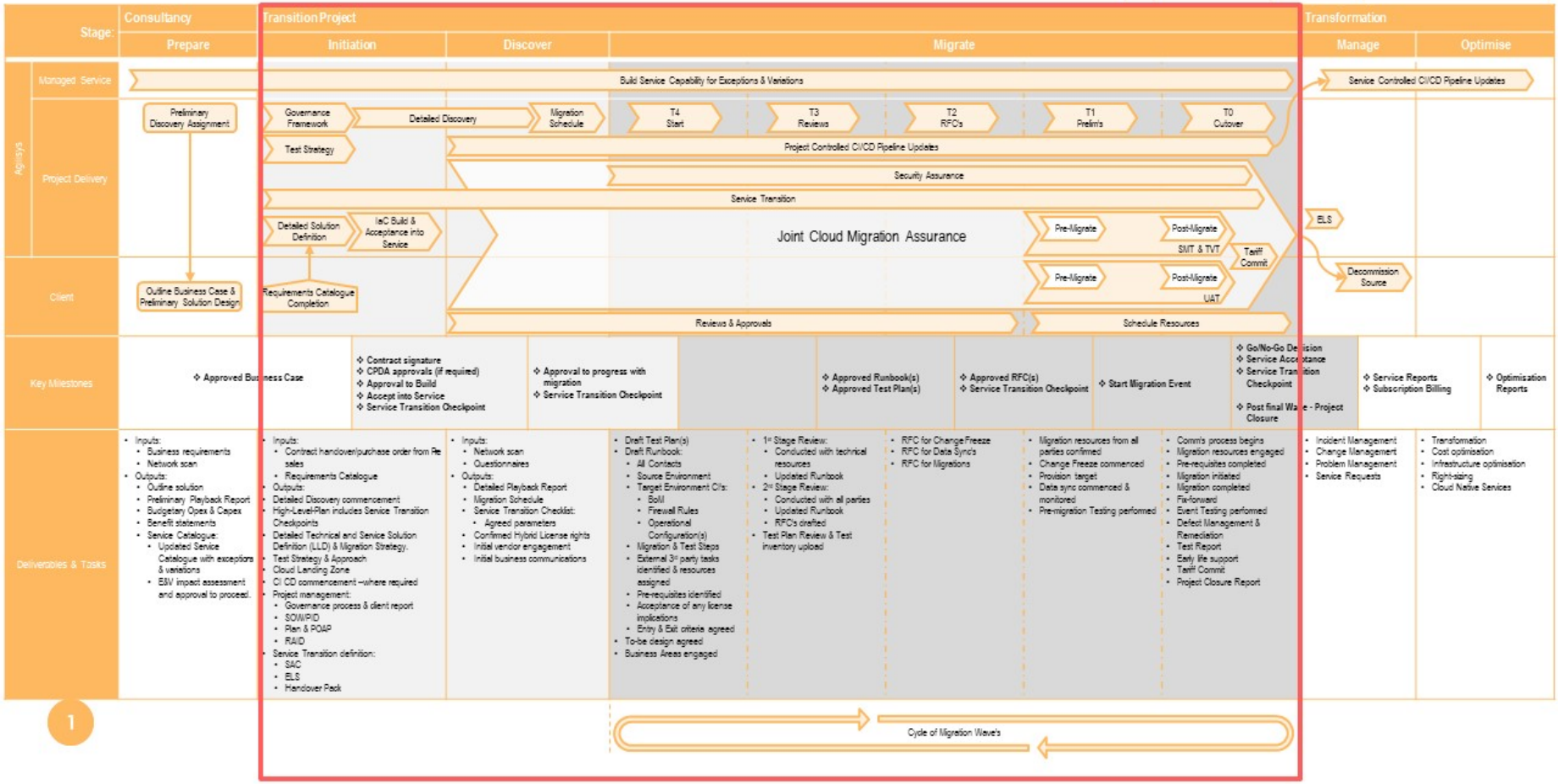
Project Plan

A phased, waterfall (linear) approach will be adopted for delivering this project. At the end of each Wave a review of the services will be completed with key stakeholders to adoption and performance , to ensure the solution is being delivered to the required expectations and standards, set out in the agreed partner proposal. We will also deliver a vendor review after each wave to ensure a full completion of lessons learned and any proposed changes to the waterfall

Project Schedule



Type of Testing		Test Resource	Purpose
SMT	System Migration Testing	Test Engineer	Test points of change
TVT	Technical Verification Testing	Application SME	Tests application is functioning correctly in target
UAT	User Acceptance Testing	Business Stakeholders	Tests key business transactions



Project Structure

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Activities and Deliverables

Activities	Deliverable	EFDC Responsibilities
1. Project Kick Off Meeting		
1.1 **Preparation and delivery of a kick-off meeting.**	1.2 Published agenda and supporting material. 1.3 Kick off meeting completed and agreed set of meeting minutes and actions published.	1.4 Ensure attendance of relevant personnel and subject matter. experts at preparation and kick-off sessions as defined by EFDC Lead.
2. Requirements Capture		
2.1 **Prepare delivery of requirements workshops to**	2.4 Requirements workshops completed.	2.7 Collaborate with the development of the requirements catalogue.

Activities	Deliverable	EFDC Responsibilities
gather & validate requirements (following Discovery phase findings). 2.2 **Issue minutes and actions from the workshops.** 2.3 **Production of Implementation Plan**	2.5 Agilisys/LCBC approved Requirements Catalogue and requirements to uplift in alignment with latest Standard Reference Architecture. 2.6 Approved Implementation Plan	2.8 Review and approve the requirements catalogue.
3. High-Level Design (HLD)		
3.1 **Draft and publish HLD.** 3.2 **Agilisys TDA to approve the HLD.**	3.3 Approved HLD	3.4 Work collaboratively with Agilisys to prepare the HLD. 3.5 Convene and provide appropriate attendees at an EFDC TDA to review and formally approve the HLD.
4. Solution Low-Level Designs (LLD)		
4.1 **Prepare draft Solution LLDs for Cloud migration / Azure Landing Zone and support development and review.** 4.2 **Agilisys TDA to approve the LLD's.**	4.3 Approved LLD	4.4 Work collaboratively with Agilisys to develop the Solution LLD's. 4.5 Convene and provide appropriate attendees at an EFDC TDA to review and formally approve the LLD.
5. Migration & Deployment Approach Migration		
6.1 Prepare the draft Deployment and Migration Approach 6.2 **Final review of discovery data and work with EFDC stakeholders and onsite team to ensure cloud application support and compliance data is documented (Questionnaires).** 6.3 **Prepare the template LoB Application Runbook.** 6.4 **Prepare the initial LoB Application migration plan.** 6.5 **Commence population of the LoB application Runbooks.**	6.6 Approved Deployment and Migration Approach document. 6.7 Validated discovery data along with cloud application support and compliance (Completed questionnaires). 6.8 Approved template LoB Application Migration Runbook. 6.9 Approved baseline LoB Application migration plan.	6.10 Work collaboratively with Agilisys to develop the Deployment and Migration Approach, the template for the Line of Business (LoB) migration plan. 6.11 Work collaboratively with Agilisys to validate discovery documentation and cloud application support and compliance (Questionnaires). 6.12 Work collaboratively with Agilisys to develop the Deployment and Migration Approach, the template for the LoB Applications migration runbook, and LoB Application migration plan.
7. Test Strategy Created Migration		
7.1 **Prepare a Test Strategy which clearly defines the roles and responsibilities of both Agilisys and EFDC. FYI this workstream will begin in parallel to the design work to ensure early awareness**	7.2 Approved Test Strategy. 7.3 Creation of test scripts	7.4 Work collaboratively to prepare a Test Strategy which clearly defines the roles and responsibilities of both Agilisys and SMBC. 7.5 Production of UAT scripts

Activities	Deliverable	EFDC Responsibilities
and resource requirements understood.		
8. Solution Design Walkthrough Migration		
8.1 **Prepare the delivery of a High-Level Solution Design walkthrough meeting.** 8.2 **Conduct one HLD walkthrough.** 8.3 **Conduct one LLD walkthrough for each LLD.**	8.4 Publish the Solution Design pack (PPT). 8.5 A Walkthrough of the Solution Design pack.	8.6 Contribute to the development of the Solution Design pack. 8.7 Attendance of relevant stakeholders at Solution Design Walkthrough session.
9. Environment Build		
9.1 **Build a new Azure environment for EFDC based on Agilisys Technical Reference Architecture.**	9.2 Azure Landing Zone built and accepted into service.	9.3 Support of any clarifications and support that might be required.
10. Environment Test and Acceptance		
10.1**Execution of test scripts.** 10.2**Management and tracking of any defects and their resolution.** 10.3**Draft and submit final test report**	10.4Test Reporting and closure report. 10.5Azure environment with no major test failures. 10.6Approved test closure report.	10.7Work collaboratively to review test scripts. 10.8Where required witness test execution 10.9Review of test reports and support of defect resolution. 10.10 Review and final approval of test closure report. 10.11 Arrange pen and security testing with remediation report made available to Agilisys in timely manner.
11. Migration and Deployment Activities		
11.1 **Provision and preparation of the target Azure environment.** 11.2 **Migration of LoB services into Azure.** 11.3 **Test and acceptance into service process** 11.4 **Finalisation of application publishing**	11.5 Provision and configuration of the target environments. 11.6 Migrated LoB services. 11.7 Acceptance of LoB services into service. 11.8 Approval of Azure Bill of Materials (BoM) with authority to provision the environment. 11.9 Support where required either directly or through application vendors of the migration process.	11.10 Where required, (particularly UAT) participation in the test and acceptance process. 11.11 Arrange pen and security testing with remediation report made available to Agilisys in timely manner.

Governance meeting framework

Meeting	Purpose	Attendees
Programme Board	Monthly: ○ Provides an executive level assessment ○ Manages escalations outside of the programme team responsibility level ○ Provides executive level project assurance for delivery across the wider Council organisation	○ Programme Executive (Chair) ○ Senior User ○ Senior Supplier ○ Agilisys Programme Manager ○ Project Manager(s) ○ SME's as required (Agilisys/Epping joint board)
Project Board	Weekly: ○ Provides a programme level assessment, Schedule, quality, cost ○ Escalates any matters to Programme Board as appropriate ○ Ensures alignment with wider business & corporate plans	○ Programme Manager ○ Agilisys Project Manager (Chair) ○ Technical Resources ○ SMEs as required ○ ICT client Project Manager (Agilisys/Epping joint board)
Resource Review	Weekly: ○ Reviews resource scheduling & availability in line with wider EFDC projects ○ Escalates concerns / priority decisions to Programme Board as appropriate	○ Agilisys Programme Manager ○ Agilisys Project Manager ○ Agilisys Head of IT ○ ICT client Project Manager (for information) (Agilisys Review)
Agilisys Governance Board	Fortnightly: ○ Provides project assurance support for Programme Manager ○ Provides independent checks for integrity, viability, quality & resourcing ○ Feedback lessons learned into other programmes	○ Programme Assurer (Chair) ○ Technical Assurer ○ Project Manager (Agilisys Board)
Change Board(s)	As required: ○ Enables changes to project scope to be discussed, documented and authorised ○ Enables changes to live service provision to be discussed, documented and authorised	○ Programme Manager ○ Project Manager(s) ○ Change Authority (Chair) (Aligns with existing CAB)
Exception Assessment Meeting	As required: Reviews any serious deviation from the plan and agrees corrective measures as required	○ Programme Executive (Chair) ○ Senior User ○ Senior Supplier ○ Agilisys Programme Manager ○ Project Manager(s) ○ SMEs as required ○ ICT client manager (Agilisys/Epping joint board)

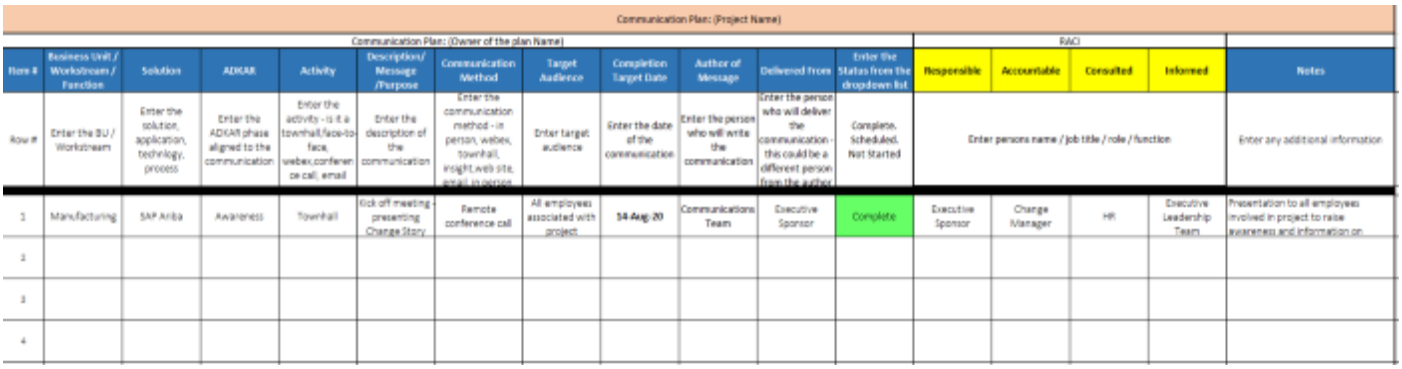
Comms Plan

A stakeholder comms plan will be developed which considers

1. The business context – including the vision of the project and the success criteria and where needed a Gap & Impact analysis
2. The objectives of the comms itself – in terms of stakeholder awareness, understanding and commitment
3. Evaluation – to assess when the comms (combined with change management are achieving the desired outcomes.
4. Stakeholder groupings – A clear definition of the range of audiences that are needed to be communicated with
5. Key messages – a key sequence of key messages, aligning with the positive affect of the change

6. The right messenger – This will ensure that the person communicating is at the right level to garner attention

An example communication plan (below) will be completed to address the needs of the project



Communication Plan: (Project Name)																
Communication Plan: (Owner of the plan Name)												RACI				
Item #	Business Unit / Workstream / Function	Solution	ADKAR	Activity	Description/ Message /Purpose	Communication Method	Target Audience	Completion Target Date	Author of Message	Delivered From	Enter the Status from the dropdown list	Responsible	Accountable	Consulted	Informed	Notes
Row #	Enter the BU / Workstream	Enter the solution, application, technology, process	Enter the ADKAR phase aligned to the communication	Enter the activity - is it a townhall,face-to-face, webex,conference call, email	Enter the description of the communication	Enter the communication method - in person, webex, townhall, insight,web site, email, in person	Enter target audience	Enter the date of the communication	Enter the person who will write the communication	Enter the person who will deliver the communication - this could be a different person from the author	Complete, Scheduled, Not Started	Enter persons name / job title / role / function				Enter any additional information
1	Manufacturing	SAP Ariba	Awareness	Townhall	Kick off meeting - presenting Change Story	Remote conference call	All employees associated with project	14-Aug-20	Communications Team	Executive Sponsor	Complete	Executive Sponsor	Change Manager	HR	Executive Leadership Team	Presentation to all employees involved in project to raise awareness and information on
2																
3																
4																

Budget and Financial Analysis

This project is part of a wider ICT strategy to move away from physical servers to a cloud-based approach. The long-term aim of the project is to close the physical data centre and reduce the cyclical capital costs of replacing hardware along with reducing any associated operational running costs.

The initial stage of the project is to move 47 servers to the Microsoft Azure cloud platform with the aspiration that others will move initially to a Software as a Service (SAAS) approach and then to Azure over a three-year period. This is the fundamental basis on which the costs and potential savings have been projected. There are no costs included for the SAAS project within this business case.

Budget Requirements (Capital)

The forecast spend on the project is £210,400 for the migration of 47 servers to Microsoft Azure. Microsoft offer funding for this type of project which varies dependent upon the number of servers migrated to the cloud. Currently funding from Microsoft is expected to be £27,200 which is paid directly to Agilisys; thereby reducing their costs to EFDC. Based on the latest information, the budget required for this project is £183,200. A provisional budget allocation of £150,000 was provided, however a further top up of £33,200 is required to complete the project.

Capital Budget Requirements			
Spend	**Year 0 2021/22**	**Year 1 2022/23**	**Total**
	£	**£**	**£**
Project Costs net of Microsoft funding	-	158,000	**158,000**
Third Party Vendors	-	40,000	**40,000**
Internal Project Costs	12,400	-	**12,400**
Forecast Costs	**12,400**	**198,000**	**210,400**
Funding:			
Microsoft Funding			**27,200**
Total Funding			**27,200**
Budget Required			**183,200**
Provisional Budget Allocation			**150,000**
Additional Budget Required			**33,200**

This is based on the transfer of the initial 47 servers and does not include any costs associated with the SAAS project.

No contingency is included therefore the risks outlined earlier in this business case associated with the need to recruit additional staff or expertise may result in an overspend against this budget. Careful monitoring of costs and regular meetings will be integral to ensuring that any potential over spends are identified early and mitigated.

It should be noted that historically EFDC's policy was to replace physical hardware generally on a cyclical 5-year basis. The estimated cost of this is £400,000 which will not be required once the data centre has been completely closed and all servers removed. The above budget is a one-off cost for the initial migration and will not be repeated on the same cyclical basis.

The SAAS project to remove the remaining servers is in the early development stages; once the costs have been established, any potential capital savings against the £400,000 cyclical 5-year budget can be more accurately measured.

It should also be noted that all capital expenditure must be funded, and this is usually achieved using capital receipts, grants, reserves or most commonly through borrowing. For the latter, EFDC must set aside a statutory provision each year to repay debt known as the Minimum Revenue Provision (MRP).

The MRP on the £400,000 historic replacement cost of the hardware would have resulted in a revenue cost annually of £80,000. Added to this, there would also have been interest paid on the debt of approximately £8,000 per year assuming a 2% interest rate.

For this project MRP and Interest costs will amount to approximately £40,304 per year for the next five years; this is £47,696 less than the same charges on the full £400,000 historic replacement cost. There are no further financing costs from year 6 onwards.

Although these are savings, they have already been assumed within the current capital programme.

Hardware Replacement	**Forecast Spend**	**MRP and Interest Costs**					
Asset Life (5 Years)		Year 1 2022/23	Year 2 2023/24	Year 3 2024/25	Year 4 2025/26	Year 5 2026/27	Year 6 2027/28
	£	£	£	£	£	£	£
Replacement of Physical Hardware	400,000	88,000	88,000	88,000	88,000	88,000	88,000
Azure Migration One Off Project Cost	183,200	40,304	40,304	40,304	40,304	40,304	0
In Year Savings - Financing Costs		-47,696	0	0	0	0	-40,304
Cumulative Savings - Financing Costs		-47,696	-47,696	-47,696	-47,696	-47,696	-88,000

Revenue Budgets – Potential Savings

These are generally the operational costs for the day to day running of the service. The project involves changes to the way in which the operational activities are performed and therefore some cost efficiencies both cashable and non-cashable can be achieved.

A summary of potential cashable savings is below. The projections assume that in Year 1 the initial 47 servers are migrated to Azure and generally 25% of identified operational costs can be saved although there are some overlap costs in the disaster recovery contract that result in an overall additional cost in Year 1 of £65,095. **The savings in subsequent years are reliant on the successful transfer of remaining servers through the SAAS project and the eventual closure of the data centre by Year 4. Forecast savings begin to emerge during Year 2, achieving full potential (£80,130) by Year 4 when the data centre has been de-commissioned.**

Costs / (Savings)	Year 0 2021/22	Year 1 2022/23	Year 2 2023/24	Year 3 2024/25	Year 4 2025/26	Year 5 2026/27	Year 6 2027/28
	£	£	£	£	£	£	£
Azure Costs	-	55,218	65,640	65,640	65,640	65,640	65,640
Net Cost/Savings on Migration							
Licences	-	(3,742)	(7,485)	(11,227)	(14,970)	(14,970)	(14,970)
Support & Maintenance	-	(875)	(1,750)	(6,010)	(10,270)	(10,270)	(10,270)
Network Costs	-	1,071	(10,155)	(27,530)	(27,530)	(27,530)	(27,530)
Business Continuity & Disaster Recovery & Backup	-	5,000	(47,000)	(83,000)	(83,000)	(83,000)	(83,000)
Energy Costs	-	(1,375)	(2,750)	(4,125)	(10,000)	(10,000)	(10,000)
In Year Costs / Cashable Savings	-	**55,297**	**(58,797)**	**(62,752)**	**(13,878)**	-	-
Cumulative Cashable Savings		**55,297**	**(3,500)**	**(66,252)**	**(80,130)**	**(80,130)**	**(80,130)**
Savings - Financing Costs							
MRP Contributions	-	(43,360)	(43,360)	(43,360)	(43,360)	(43,360)	(80,000)
Interest on Borrowing	-	(4,336)	(4,336)	(4,336)	(4,336)	(4,336)	(8,000)
In Year Savings - Financing Costs	-	**(47,696)**	-	-	-	-	**(40,304)**
Cumulative Savings - Financing Costs		**(47,696)**	**(47,696)**	**(47,696)**	**(47,696)**	**(47,696)**	**(88,000)**

**Please note that costs are at current values; no inflation has been included.*

***The savings from financing costs have already been assumed in the current capital programme.*

Detailed Analysis

Licences:

Windows, SQL and Oracle licences are not affected by the migration; all will be required in the new environment. Savings can be achieved through a reduction in licences and support costs of the current VM Ware.

Licences	Year 0 2021/22	Year 1 2022/23	Year 2 2023/24	Year 3 2024/25	Year 4 2025/26	Year 5 2026/27	Year 6 2027/28
	£	£	£	£	£	£	£
Current Costs	86,571	86,571	86,571	86,571	86,571	86,571	86,571
Forecast Costs	86,571	82,829	79,086	75,344	71,601	71,601	71,601
Cashable Savings - In Year	0	-3,742	-3,743	-3,742	-3,743	0	0
Cashable Savings - Cumulative	0	-3,742	-7,485	-11,227	-14,970	-14,970	-14,970

Support & Maintenance

General support and maintenance costs will be reduced in line with the de-commissioning of the data centre.

Support & Maintenance	Year 0 2021/22	Year 1 2022/23	Year 2 2023/24	Year 3 2024/25	Year 4 2025/26	Year 5 2026/27	Year 6 2027/28
	£	£	£	£	£	£	£
Current Costs	10,270	10,270	10,270	10,270	10,270	10,270	10,270
Forecast Costs	10,270	9,395	8,520	4,260	0	0	0
Cashable Savings - In Year	0	-875	-875	-4,260	-4,260	0	0
Cashable Savings - Cumulative	0	-875	-1,750	-6,010	-10,270	-10,270	-10,270

Network Costs

Although network costs will significantly reduce over the period in which the data centre is de-commissioned, there will be some initial duplication in terms of the additional network needs of Azure.

Network Costs	Year 0 2021/22	Year 1 2022/23	Year 2 2023/24	Year 3 2024/25	Year 4 2025/26	Year 5 2026/27	Year 6 2027/28
	£	£	£	£	£	£	£
Current Costs	69,500	69,500	69,500	69,500	69,500	69,500	69,500
Forecast Costs	69,500	52,125	34,750	17,375	17,375	17,375	17,375
Azure Network Costs	0	18,446	24,595	24,595	24,595	24,595	24,595
Total	69,500	70,571	59,345	41,970	41,970	41,970	41,970
Cashable Savings - In Year	0	1,071	-11,226	-17,375	0	0	0
Cashable Savings - Cumulative	0	1,071	-10,155	-27,530	-27,530	-27,530	-27,530

Business Continuity; Disaster Recovery and Backup

The current Disaster Recovery contract with Zerto does not expire until July 2023. Azure offers this service at a much-reduced cost and there will be some overlap in the initial stages, however moving to Azure offers significant savings in this area.

Business Continuity/Disaster Recovery/Backup	Year 0 2021/22	Year 1 2022/23	Year 2 2023/24	Year 3 2024/25	Year 4 2025/26	Year 5 2026/27	Year 6 2027/28
	£	£	£	£	£	£	£
Current Costs	128,106	128,106	128,106	128,106	128,106	128,106	128,106
Forecast Costs	128,106	128,106	56,106	20,106	20,106	20,106	20,106
Azure Disaster Recovery	0	5,000	25,000	25,000	25,000	25,000	25,000
Total	128,106	133,106	81,106	45,106	45,106	45,106	45,106
Cashable Savings - In Year	0	5,000	-52,000	-36,000	0	0	0
Cashable Savings - Cumulative	0	5,000	-47,000	-83,000	-83,000	-83,000	-83,000

Energy

The data centre is housed within the Civic Offices. It is difficult to determine the cost of one area in such a large building and establish any associated possible savings. Work by Agilisys identified the average energy use for servers in the data centre at approximately £5,500 per annum; added to this cost is the air conditioning unit which for the purposes of this project has been assumed to be a further £4,500 The removal of servers from the data centre will drip through savings over time but once the data centre has been de-commissioned, more substantial savings can be achieved through reduced air conditioning needs.

Energy	Year 0 2021/22	Year 1 2022/23	Year 2 2023/24	Year 3 2024/25	Year 4 2025/26	Year 5 2026/27	Year 6 2027/28
	£	£	£	£	£	£	£
Current Costs	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Forecast Costs	10,000	8,625	7,250	5,875	0	0	0
Cashable Savings - In Year	0	-1,375	-1,375	-1,375	-5,875	0	0
Cashable Savings - Cumulative	0	-1,375	-2,750	-4,125	-10,000	-10,000	-10,000

Efficiencies (Non - Cashable)

The project aims to provide a seamless move from physical servers in a data centre to a cloud-based solution and thereby initiating benefits in officer time and resource allocation within the service. This will help the efficient running of the service but will not result in cashable savings. The non-cashable benefits have been identified earlier in the Benefits and Outcomes section of the business case.

Risks

Resourcing Risk: There are a risks that technical and business resources are unavailable to support the project as required. Currently project delivery maturity and framework within EFDC is low and BAU causes uncontrolled pulls on technical time larger than in a more controlled environment – so even when project time is allocated it is hit and miss if this resource becomes available in the timeframe agreed.

In a similar council project it demanded an ongoing 20% resource from the infrastructure team.

If the risk materialises it could impact the time and cost of the project – both in terms of the Microsoft funding assistance and the contractually agreed timeframes with Agilisys.

Skills Risk: The infrastructure team is small and there isn't as much shared skills between members as needed to reduce the likelihood of single points of failure skills wise for this project. This could cause EFDC to require contracting in missing skills at additional expense.

Unknown risk: The cost benefits of this project is highly aligned to the (as etc) un-costed, unplanned SaaS project.

3rd Party Risk: EFDC have outsourced the technical capabilities to a 3rd Party Agilisys. There is a risk if the relationship with the partner or the resources are unavailable at any time to support the project as required.

A full breakdown (including mitigation options) includes.

Risk Title	Owner	Description	Impact	Proposed Mitigation
Change priorities	ALL	Other IT changes may take precedence over the progression of this project.	Delays and additional project costs to reschedule activities.	The project will not seek to disrupt other business critical activities. We will seek in the early stages a Change process dedicated to this project and in the event of any concerns, if required, escalate to senior stakeholders within EFDC.
Co-operation and collaboration are not possible due to EFDC team workload.	ALL	Lack of business engagement and support typically results in compromising the pace of the project and integrity of the end product.	The project will need to engage with EFDC as early as possible. Agilisys will provide reasonable endeavours to support EFDC in this area.	The primary resources are listed in the resource table. Where the deferral of activities will impact delivery timescales and costs, the issue will be escalated. EFDC to provide a resource plan with Senior Management support to ensure that the Cloud Migration is correctly prioritised and resourced by EFDC.
Access to in-scope servers (credentials and firewall rules) may be insufficient or not delivered in a timely fashion.	Agilisys	Access to in-scope servers from the discovery appliance is required to effectively map the resources and interdependencies between servers.	Insufficient data or understanding of the as-is environment and deployment of firewall rules and access to credentials will impact the ability to effectively complete the Playback report.	Agilisys will establish the common view of missing data items and explicitly identify these with associated variance.
Inadequate information about applications.	ALL	Inadequate information about applications in the preparation of designs, plans or	May impact the quality of project deliverables.	Agilisys will establish the common view of missing data items and explicitly identify these with associated variance. Where there are concerns about quality, these will be addressed on a case-by-case basis.

Risk Title	Owner	Description	Impact	Proposed Mitigation
		other project deliverables.		An assumption register will be maintained and agreed with the EFDC team.
Provision of 3rd party products and services.	EFDC	Delays associated with the co-operation, procurement cycles and supply of support services, software upgrades etc. from EFDC's 3rd party vendors may impact the preparation and execution of migration activities without full support of relevant SME's.	This may result in the viability of proceeding with a migration event may be compromised.	Agilisys will include this in the Cloud Migration Project as a risk from day 1 and will manage through normal project governance. EFDC should engage with its key vendors at a senior level to ensure full support for the Cloud Migration project. Procurement activities will be factored into the overall project plan and tracked as part of the standard governance activities.
Test Coverage	ALL	Insufficient depth and test coverage as well as poor preparation of test strategy, approach and scripts.	Compromise quality of testing.	Agilisys takes a risk-based approach to migration testing and will provide and execute its test plan under project governance. EFDC should ensure its application testing and UAT is supported by appropriate test scripts and governance.
Planned Outages	ALL	There will be planned outages as part of Cloud Migration activities. There is a risk that business activities and priorities may constrain the project plan and cause delays and additional cost to EFDC.	This will either delay the project of compromise Agilisys ability to deliver.	EFDC should ensure that the agreed plan is prioritised and that migrations are not delayed by business demands. Where there is impact on timescales and cost CCN's may apply.
Configuration and process changes	ALL	Configuration and process changes required by Cloud Migration may introduce security vulnerabilities;	These may impact on service Confidentiality, Integrity or Availability and additional costs to EFDC to remedy."	Agilisys will provide a technical design based on the Azure Platform Risk Methodology guidance. EFDC will ensure that the design is properly reviewed and approved, including for security and regulatory compliance, before implementation.
Service decommissioning might be delayed	ALL	Service decommissioning might be delayed by .e.g. service interdependencies, supplier support, application testing.	This will result in duplication and parallel run of infrastructure and additional costs for EFDC.	The Cloud Migration board will provide governance of project decision-making including accepting delays to benefits realisation. The Cloud Migration plan will provide a best view of inter-dependencies and assume an assertive approach to managing this area of change.
Iterative design review and	ALL	Iterative design review and approval	There is a risk, the volume of work as a	Ensure that design principles are clear at the outset and utilise both the Agilisys TDA

Risk Title	Owner	Description	Impact	Proposed Mitigation
approval process may result in rework		process may result in rework and additional costs to EFDC.	result of a replatform driven by a 3rd party vendor requirement will exceed the planned project duration.	function and EFDC TDA function to review. EFDC will establish dedicated TDA and Change Boards for Cloud Migration reviews.
Planned duration	ALL	There is a risk, the volume of work as a result of a Replatform driven by a 3rd party vendor requirement will exceed the planned project duration.	Extended project timescales.	These circumstances will be handled through Contract change control and additional funding will be provided by EFDC.

Appendix: Comparison Google to Azure Cloud Options

Part of the ICT strategy involves de-commissioning the on site data centre over the next three to four years by removing the need for physical servers for a cloud based option. The current business case proposes to use Microsoft Azure as its preferred option. However, a comparison to an alternative option – Google has been made to establish whether the costs could be reduced.

Below is a summary of the costs of the two options. To maintain the link to the original business case, 2022/23 assumes a 9 month only cost compared to the full year costs. The delayed start to the project means that this is not likely to be achieved – therefore a true comparison of costs will be those in 23/24 and beyond where a full annual charge is made.

	22/23	23/24	24/25	25/26	26/27
	£	£	£	£	£
Azure Option Costs	55,218	65,640	65,640	65,640	65,640
Network costs	18,446	24,595	24,595	24,595	24,595
Azure DR and backup	5,000	25,000	25,000	25,000	25,000
Annual Costs of Azure	**78,664**	**115,235**	**115,235**	**115,235**	**115,235**
Google Option Costs	42,059	56,078	56,078	56,078	56,078
Network costs	2,593	3,457	3,457	3,457	3,457
Google DR and backup	25,394	50,580	50,580	50,580	50,580
1 x FTE Post	43,500	58,000	58,000	58,000	58,000
2 x Domain Controllers	3,750	5,000	5,000	5,000	5,000
Professional Support Costs	3,750	5,000	5,000	5,000	5,000
Annual Costs of Google	**121,046**	**178,115**	**178,115**	**178,115**	**178,115**
Azure Compared to Google	**- 42,381**	**- 62,880**	**- 62,880**	**- 62,880**	**- 62,880**

Looking at the figures above, the cost of Azure is £62,880 per annum less than the equivalent charge from Google.

However, additional decision considerations need to be taken into account.

1. All other technical solutions that EFDC are pursuing involving cloud based solutions are Azure based – this is primarily dictated by 3rd party providers.
2. Our current chosen solution partner (Agilisys) for Azure can also deliver Google hosted cloud solutions and based on our requirements for this project and their current support on this project to date, they indicate that Azure should be our preferred choice.
3. All the councils in the Essex on Line Partnership have chosen Microsoft over Google – so choosing Azure keeps us aligned with our partners.
4. Azure security section provides familiarity containing Azure Active Directory, MFA, ADFS etc. of which is there is no equivalent in GPC.
5. Significantly, Microsoft Azure certifies up to Official Sensitive, GPC does not advertise its data certification status.
6. Current IT staff members are familiar with Microsoft but would require extensive training to ensure the ongoing technical support of operating a dual tech stack. Internally the infrastructure team would prefer an Azure solution.
7. In addition, if Google was chosen, any subsequent recruitment of infrastructure members would either require additional salary spend to secure an individual with experience of both Azure and GPC (typically they are experienced in one or the other) or an additional train-up time for them to become familiar with the other tech stack with which they are not familiar.