

Project Documentation

**POST PROJECT EVALUATION DOCUMENT
(PPE)**

**Business Continuity Infrastructure
(Duplicate Server Facility)**

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Approved by:	

Document History

Revision Date	Version	Summary of Changes	Reviewer(s)
10/08/2022	0.1	Initial	
16/08/2022	0.2	Incorporation of Corporate Improvement Team comments	

Consideration by the Corporate Improvement Team

Date	Reviewing Officer	Comments for Consideration
16/08/2022	Andy Buckley	Minor suggested amendments fed back to author for consideration

Approvals

This document requires the following approvals:

Name of person, group, or committee	
Cabinet	6 September 2022
Director for Corporate Service	
Divisional Manager Business Support	

Distribution

Name	Job Title

1. PURPOSE OF DOCUMENT

This document provides a review of how the Business Continuity Infrastructure project performed against the original intentions set out in the Project Initiation Document (PID).

It allows lessons learned to be passed on to other projects and ensures that provisions have been made to address all open issues and risks alongside follow on actions and recommendations where appropriate.

It also provides the opportunity to assess any expected outcomes that have already been achieved and/or provide a review plan for those outcomes yet to be realised.

2. ORIGINAL PROJECT DESCRIPTION

To build and commission an offsite disaster recovery solution for Chichester District Council's (CDC) Information, Communications & Technology (ICT) infrastructure. That will provide access to key systems in a business continuity scenario.

Our project will deliver a major improvement in corporate operational capability and service resilience. Gained through the creation of a CDC 'cloud' and housing a fully functioning duplicate of the East Pallant House (EPH) ICT architecture. Providing, in the event of serious disruption to EPH, hosted system continuity and support as per corporate business continuity planning (BCP) expectations.

Leveraging the new West Sussex County wide area network (gigabit WAN) we will create a mirrored IT environment at the Westhampnett Depot. As our Disaster Recovery Site (DR) this is where we will conduct our regular system backups and hold dormant applications of all major programmes and systems. Ready, in the event of a major outage at EPH, to be brought out of suspension and provide IT support and enable continuity and service delivery.

3. PROJECT OBJECTIVES

The details below are taken directly from the PID presented to Cabinet in March 2019. All have been delivered.

3.1 Outputs:

- Storage Area Network (SAN) server replacement at EPH
- Provision of server facility within Westhampnett depot (premises): including server cabinets, electrical, network, cooling, security, fire proofing and suppressant systems.
- 'Kit out' of server facility: provision of network, storage area network, windows, oracle servers, telephony, and backup infrastructure.
- Replication of key council system codes/programmes (software).
- Replication (backup) of data from the main data centre at EPH.
- Connectivity and hardware to provide internet access, email, and virtual private network (VPN) for essential users (design will include scalability options to enable the facility to be built up quickly to provide full operational capacity).

3.2 Outcomes:

A new server located remotely from EPH, with appropriate cooling, security and power facilities from which ICT service will provide

- Appropriate network, storage and server hardware and systems (to minimise impact on essential operations during a business continuity event).
- Provide internet connectivity for hosted systems, email, and telephony.
- Ability to undertake (usual) off site backup and restoration of the council's data and systems.
- Provide resiliency for key council systems in the event of a hardware failure.
- The ability to scale the solution to allow for additional services and capacity if longer running is required from the DR site.

3.3 Outcome Measures:

Existing DR capacity is reliant on external variables: unknown nature of disaster; inability to anticipate accessibility of existing EPH infrastructure; unknown availability of replacement hardware; unknown location for constructing replacement hardware; quality control of existing 'tape' back up unverifiable.

Once our new server location has been commissioned, we will.

- Remove most DR unknowns. Regardless of 'physical' situation at EPH we will have capability to 'switch' instantly to our fail-over site remotely.
- In the event of a BCP emergency ICT service staff will be able to focus immediately on recovery of full system capability and supporting service continuity.
- Remove the time required to replace and commission hardware: In the event of a disaster, we will have a fully operational and available immediately, system capable of supporting the Corporate Business Continuity and Disaster Recovery Plans. Additionally, the system will offer scalable options should the EPH infrastructure remains out of action in the medium to long term.
- Quality control: back up will be faster and 100% verifiable, with the option of increased frequency (currently 'snapshots' taken daily, full back up weekly)

3.4 Dis-benefits:

Although this was the most financially beneficial solution, in terms of corporate and operational risk reduction options, the creation of our remote disaster recovery site will result in increased energy costs across our IT estate.

In summary, this project has delivered a disaster recovery site (at Westhampnett Depot) that can now be used to recover and restore our technological infrastructure and operations when our primary East Pallant House site becomes unavailable.

The new site is in constant stand-by mode. In this state it provides recovery point objectives (RPO) of at least one hour. This is basically the minimum frequency between backups. Prior to this project our RPO was one week.

In this state it also provides a recovery time objective (RTO – how long it takes to get systems operational) of around six hours (The length of time it will take to make the site fully operational).

4. PROJECT COSTS

The total agreed budget for this project was £505,300. Consisting of (1) existing Asset Replacement Programme and (2) new capital funding from reserves (Cabinet, items 5 & 8: 5 March 2019). A detailed list of individual components and funding requirements can be found under appendix 1.

The project delivered all objectives (reported in section 3) within budget, as confirmed by the Council's Capital Accountant. With a few items still outstanding we anticipate returning in the region of £84,000 to reserves.

In addition, an extra £10K per year has been added to the ICT revenue base budget (as per the Project PID) to cover increased operational costs, i.e., insurance, internet connection, networking additions.

5. PROJECT PLAN

The project plan consisted of 5 milestones covering 11 critical stages and involved coordination of more than 12 external suppliers/stakeholders. We had originally estimated the project would take 34 weeks, commencing November 2019. However, the subsequent COVID pandemic drove a coach and horses through our project's critical path timelines, adversely impacting every stage and milestone.

Fortunately, the structured stage and milestones plan, together with our Project Management Process (see section 6), meant that we were able to adapt our activities and maintain both forward momentum (albeit very slowly at times) and effective cost controls.

Milestone	Project Stage	Scheduled Completion Date	Actual Completion Date	Comments
Depot Room	Stage 1 – build	0 + 6 weeks	0 + 16 weeks (Complete 12/19)	Overran due to more complex build & fire suppressant requirements.
EPH & Depot Infrastructure	Stage 2 – server room build	0 + 7 weeks	0 + 30 weeks (Complete 04/20)	Knock on delay due to stage 1 overrun.
	Stage 3 – SAN	0 + 10 weeks	0 + 32 weeks (Complete 04/20)	EPH SAN's built on time, but Depot SAN delayed due to lockdown.
BCP/DR Infrastructure	Stage 4 – VMware	0 + 13 weeks	0 + 43 weeks (Complete 06/20)	Overran due to stage 3 delay.
	Stage 5 – Dell/Citrix	0 + 16 weeks	0 + 46 weeks (Complete 06/20)	Overran due to stage 3 delay.
	Stage 6 – Oracle servers	0 + 20 weeks	0 + 32 weeks (Complete 04/20)	Ran alongside stage 3.
	Stage 7 – VPN/WiFi/DMZ	0 + 30 weeks	0 + 90 weeks (Complete 07/21)	Stage 9 and lockdown delay
	Stage 8 – Backup circuit installed	0 + 31 weeks	0 + 90 weeks (Complete 07/21)	Stage 9 and lockdown delay
Gigabit Connectivity	Stage 9 – Install new WAN	0 + 31 weeks	0 + 60 weeks (Complete 12/20)	WSSC install delay due to lockdown.

User Acceptance Testing (UAT) & Commission	Full Site Test	0 + 33 weeks	0 + 100 weeks (Complete 07/22)	Stage 8 dependant. Started testing 09/21
	Sign Off	0 + 34 weeks	0 + 104 weeks	Completed 07/22

Project started 08/2019 and concluded 07/2022 (total of 104 weeks)

6. PROJECT MANAGEMENT PROCESS

The project was managed completely in house under PRINCE2 Agile® principles. This is a blended project management approach that emphasises collaboration, team empowerment and iterative development that should lead to ultimate success.

PRINCE2 is a methodology for managing projects, whereas Agile is a way of carrying out the project work. By combining the two we were able to provide structure, governance and controls whilst working with agile methods, concepts, and strategies.

This was without doubt a major undertaking. It showed ambition, both corporately and for the ICT Service. However, the lessons learned, confidence gained, and knowledge acquired was by all involved, worth the pain and stress.

7. FURTHER ACTION

Following completion of this project and delivery of all PID outcomes, we will see continual development and improvement across all aspects of the site.

1. Corporate: A meeting has been arranged with the Safety and Resilience Manager (early September) to assess the impact of the new server site capabilities and how these can now be incorporated into both the Corporate and individual Service Business Continuity Plans.
2. Corporate & ICT: Through remote working during lockdown, we have greatly increased our knowledge of home working trends, VPN activity, staff working patterns and resilience, etc. This will greatly improve our understanding of possible IT demands moving forward.
3. ICT: Although we have greatly improved our start up and shut down procedures as a result of the UAT and commissioning exercises, we will continue to check and test our processes.
4. ICT: Although the design was only to enable one way transfer of data (from EPH to the Depot site), the basis for enabling the Depot site to become the primary server environment is in place. Enabling this would require full evaluation, but in principle is possible.

8. REVIEW PLAN

None

Appendix 1: Project Costs: Original PID breakdown

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1	San	63,000	<i>Storage area network: essential in delivering high activity/low latency business critical applications.</i>
	<i>Back up switch</i>	5,000	<i>Component linking SAN with server infrastructure</i>
2	San Connectors	40,000	<i>Linking SAN to our network (local area network)</i>
3	Hosts (x6)	71,000	<i>Used to provide the routing between the SAN and servers</i>
4	Oracle Solaris (server)	45,000	<i>Operating system supporting some of our major applications</i>
5	Network Connections	60,000	<i>New SAN and Oracle connections across our network</i>
A	VPN	35,000	<i>Upgrades to our virtual private network due to end-of-life components</i>
B	Licences	31,500	<i>Enhanced licences necessary to run software across our new network</i>
D	Consultancy	25,000	<i>Assistance configuring our new servers and making them 'gigabit' capable.</i>
		<u>375,500</u>	

Existing Asset Replacement (Capital) Funding:

New Capital Funding Requirement:

<u>IT Related</u>	<u>£</u>	<u>Building Related</u>	<u>£</u>
SAN Server	63,000	Building works	16,000
SAN Connectivity	20,000*	Generated supply & power works	45,000*
Sun Oracle Boxes	15,000*	Raised floor	2,000
Network Connectivity	40,000*	AC system	6,000
Sundries	25,000	Netbotz security	3,000
<i>(Gigabit network cards, cables, cabinets)</i>		Roller shutters	1,800
Consultancy	25,000*	Fire suppressant	8,000
<u>TOTAL:</u>	<u>188,000</u>	Change over switch	5,000
		<u>TOTAL:</u>	<u>86,800</u>
<u>New Capital Requested:</u>	<u>88,000</u>	<u>New Capital Requested:</u>	<u>41,800</u>

(* propose funding from existing ARP capital provision)