

<b>DIRECTORATE OF RADIOLOGY</b>  <b>TITLE: Sectra PACS Business Continuity and Disaster Recovery Plan.</b>	<b>Doc No.</b>		PACS25	
	<b>Issue No.</b>		1	
	<b>Issue Date</b>		27.12.19	
	<b>Review Date</b>		03/10/22	
	<b>Originator</b>		LB	
	<b>Page</b>	- 1 -	<b>of</b>	15

## Approval Sheet

The document is confidential to the organisation. All work instructions are mandatory within the organisation.

Approved:

Radiology Directorate Governance/Operations Group

### NOTE

Numbered copies of this document have been issued to registered holders. These copies will be maintained. Amendments to unnumbered copies will not be issued.

*The copyright of this document is the property of East Lancashire Hospitals NHS Trust Department of Radiology. The document is supplied on the condition that it may not be disclosed to third parties without the written authorisation of the copyright owner.*

<b>DIRECTORATE OF RADIOLOGY</b>  <b>TITLE: Sectra PACS Business Continuity and Disaster Recovery Plan.</b>	<b>Doc No.</b>		PACS25	
	<b>Issue No.</b>		1	
	<b>Issue Date</b>		27.12.19	
	<b>Review Date</b>		03/10/22	
	<b>Originator</b>		LB	
	<b>Page</b>	- 2 -	<b>of</b>	15

## DOCUMENT REVISION

The Radiology Directorate Governance/Operations Group in conjunction with the Radiology IT Systems and Performance Manager is responsible for authorising changes to this document.

The issue number and date of issue is identified on the front page and each subsequent page of the document.

Alterations will result in a change to the issue status and complete reissue of the overall document.

Records of all changes to the Departmental Work Instructions will be maintained by the Radiology IT Systems and Performance Manager for audit purposes.

### Record of Changes - Doc: PACS25

Issue No.	Issue Date	Summary of Change
1	27.12.19	Initial issue
2	03.10.22	Amendment to Sectra Helpdesk telephone number.

<b>DIRECTORATE OF RADIOLOGY</b>  <b>TITLE: Sectra PACS Business Continuity and Disaster Recovery Plan.</b>	<b>Doc No.</b>		PACS25	
	<b>Issue No.</b>		1	
	<b>Issue Date</b>		27.12.19	
	<b>Review Date</b>		03/10/22	
	<b>Originator</b>		LB	
	<b>Page</b>	- 3 -	<b>of</b>	15

**1. OBJECTIVES**

- The underlying principle of the Business Continuity (BC) and Disaster Recovery (DR) Plan is to ensure the minimum disruption to the organisation caused by unexpected downtime and effectively recover from an incident within an agreed recovery time-scale and to continue to provide support services at an effective level, so not to jeopardise the welfare of our patients or the reputation of the hospital.
- To ensure staff know their responsibilities in unexpected situations where PACS is unavailable. The BC plan has been developed as a guide for users. It outlines the core elements of the system, a risk analysis and the management of these risks.
- To define a clear process to follow in the event that PACS has gone down (in hours)
- To define a clear process to follow in the event that PACS has gone down (out of hours)

**2. TARGET AUDIENCE**

This Business Continuity Plan has been developed as a guide for PACS users. It outlines the core elements of the system, a risk analysis and the management of these risks.

**3. IDENTIFIED RISKS**

An understanding of what is at risk and to what extent this risk may disrupt normal service is required. This involves the identification of risks and hazards caused directly or indirectly by the failure of the system.

Contingencies for maintaining service delivery, communications within the organisation and with partner agencies, and the estimation of recovery time-scales, needs to be considered. The longer an incident ensues, the greater the operational impact on the organisation and the lesser are its capabilities to recover quickly from the incident.

The risk assessment involves:

- Identifying the threats and issues facing the organisation should the system fail.
- Assessing the potential impact of this failure on the organisation and its partners
- Assessing the likelihood of each identified threat occurring.

<b>DIRECTORATE OF RADIOLOGY</b>	<b>Doc No.</b>	PACS25	
<b>TITLE: Sectra PACS Business Continuity and Disaster Recovery Plan.</b>	<b>Issue No.</b>	1	
	<b>Issue Date</b>	27.12.19	
	<b>Review Date</b>	03/10/22	
	<b>Originator</b>	LB	
	<b>Page</b>	- 4 -	<b>of</b>

CONSEQUENCE	INSIGNIFICANT	MINOR	MODERATE	MAJOR	CATASTROPHIC
	1	2	3	4	5
LIKELIHOOD					
ALMOST CERTAIN (Will undoubtedly occur/recur, persistent issue, at least weekly – continuous exposure to risk)	5	5	10	15	20
LIKELY (likely to occur, recur, but not persistent; every two to six weeks)	4	4	8	12	16
POSSIBLE (Likely to occur/recur, occasional problem occurs up to 12 monthly)	3	3	6	9	12
UNLIKELY (Unlikely to occur. recur, but if so, no more than yearly Possible between one and five years)	2	2	4	6	8
RARE (Not expected to occur/recur)	1	1	2	3	4

Identified Risk	Impact of Risk & Triage Score	Likelihood of Risk Occurring	Business Continuity Plan following risk occurring
Complete failure of the system due to the following reasons:  1) Software 2) Hardware 3) Power Failure 4) Flood	Moderate  Frequency = 2 Consequence = 4 <b>(8)</b>	This risk is disruptive and may occur occasionally.  <u>How to identify when the system has failed:</u> All users in all areas of the Hospital would be unable to either access or use the functionality (this would not just be individual users unable to use the system).	In the first instance staff must contact The PACS Team on ext 84451 / 82979 to log the issue and to establish the reasons for this failure. If the failure occurs out of office hours then a call must be made to Siemens PACS support desk and to the switchboard operator who will contact the IT services on call manager.  In order to

<b>DIRECTORATE OF RADIOLOGY</b>  <b>TITLE: Sectra PACS Business Continuity and Disaster Recovery Plan.</b>	<b>Doc No.</b>		PACS25	
	<b>Issue No.</b>		1	
	<b>Issue Date</b>		27.12.19	
	<b>Review Date</b>		03/10/22	
	<b>Originator</b>		LB	
	<b>Page</b>	- 5 -	<b>of</b>	15

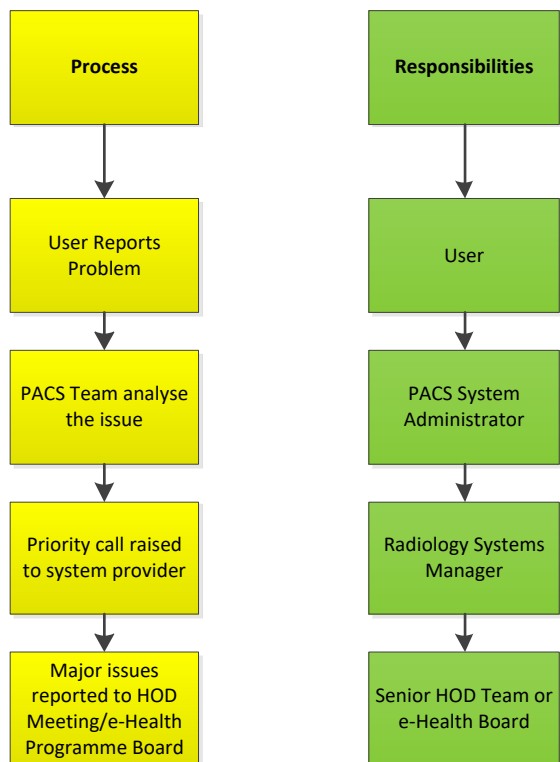
			<p>minimise the impact on patient care and to ensure maximum patient flow – See Appendices C and D</p>
Partial Failure (System) failure	Possible/Minor Frequency = 2 Consequence =2 <b>(4)</b>	This risk is minimal and may occur due to a problem within a specified area (local electricity or network issue).	Staff may be able to access the system on a different PC either in the same department or on a neighbouring department. Staff should endeavour to access the system from the nearest available point in order to maintain service.
Partial Failure (Software) failure	Possible/Minor  Frequency = 2 Consequence =2 <b>(4)</b>	This risk is minimal and may occur due to the configuration of the system tables/software. If for example files become corrupted a manual intervention by staff will be required.	<p>In the first instance staff must contact The PACS Team on ext 82979 / 84451 to log the issue and to establish the reasons for this failure. If the failure occurs out of office hours then a call must be made to Siemens PACS support desk and to the switchboard operator who will contact the IT services on call manager.</p> <p>In order to minimise the impact on patient care and to ensure maximum patient</p>

<b>DIRECTORATE OF RADIOLOGY</b>  <b>TITLE: Sectra PACS Business Continuity and Disaster Recovery Plan.</b>	<b>Doc No.</b>		PACS25	
	<b>Issue No.</b>		1	
	<b>Issue Date</b>		27.12.19	
	<b>Review Date</b>		03/10/22	
	<b>Originator</b>		LB	
	<b>Page</b>	- 6 -	<b>of</b>	15

			flow – See Appendices C and D
Human Error – Manual contingency plans	Possible/Minor Frequency = 2 Consequence = 2 <b>(4)</b>	This risk is minimal however, this may occur due to human error. Manual data collection maybe missing completely or illegible.	Departmental manual processes should include spot checking of manual data to ensure data is accurate on PACS.

#### 4. RESPONSIBILITIES

Responsibilities for actions within the plan vary from severity of the issue, from the user initially reporting the issue through to escalation to senior Radiology Managers, Senior Heads of Department Team (IM&T) and the e-Health Board



<b>DIRECTORATE OF RADIOLOGY</b>  <b>TITLE: Sectra PACS Business Continuity and Disaster Recovery Plan.</b>	<b>Doc No.</b>		PACS25	
	<b>Issue No.</b>		1	
	<b>Issue Date</b>		27.12.19	
	<b>Review Date</b>		03/10/22	
	<b>Originator</b>		LB	
	<b>Page</b>	- 7 -	<b>of</b>	15

## 5. PROCESS OWNERS

In the event of a full system failure, the PACS team would be responsible for the instigation of the BC plan after a full assessment /impact analysis has been undertaken.

## 6. CONTACT DETAILS / COMMUNICATIONS PLAN

Details of escalation processes, contact details – internal staff / external support. (Appendix D)

## 7. PROCEDURE (refer to Appendices A,B,C,D,E)

- If PACS is down, first ensure it is actually a problem with PACS (Appendix A). Try another PC /workstation. If PACS fails to launch on other PCs /workstations then contact the PACS team. If out of hours ( in hours are 08:00 – 17:00 Mon- Fri), the senior radiographer logs a call with the Sectra helpdesk:

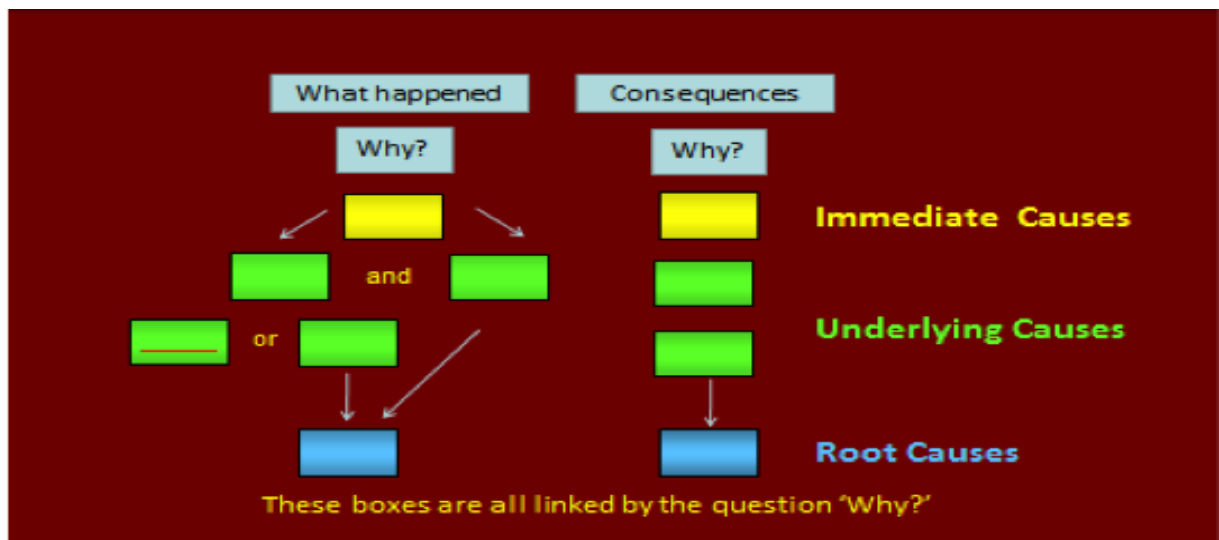
**Sectra helpdesk: 0800 29 22 044**

- If the images are failing to send from the modality, confirm other modalities are working as expected and restart the modality. If all images are failing then contact the PACS team. If out of hours, the senior radiographer logs a call with the Siemens helpdesk on the above numbers.
- If the failure occurs in hours, the PACS team will inform the following: Radiology Directorate Manager, Radiology Operations Manager, Bed management team, OP clinics, ED, UCC, MIU, MAU, STU, CCU, Critical Care and Paediatrics.
- If the failure occurs out of hours, the senior radiographer informs the following: ED, UCC, MIU, Critical Care, CCU, MAU, Paediatrics and the Bed Management Team
- If the failure occurs out of hours then the senior radiographer also informs IT (call IT service desk on 83135).
- During the downtime (both in and out of hours), CDs containing the patient's images are to be created using the CD robots within the radiology department. CDs will be provided to all clinics, ED and wards requesting imaging during this period.
- When PACS is back up, the seniors / modality leads in each department are to ensure all the images acquired during the downtime period are available to view on PACS. All areas (as described above) are informed that the system is back up.

## 8. ROOT CAUSE ANALYSIS PROCESS

<b>DIRECTORATE OF RADIOLOGY</b>  <b>TITLE: Sectra PACS Business Continuity and Disaster Recovery Plan.</b>	<b>Doc No.</b>		PACS25	
	<b>Issue No.</b>		1	
	<b>Issue Date</b>		27.12.19	
	<b>Review Date</b>		03/10/22	
	<b>Originator</b>		LB	
	<b>Page</b>	- 8 -	<b>of</b>	15

A root cause analysis approach will be used after the triggering of the BC plan to identify causes of why the incident occurred so that the most effective solutions can be found and implemented, using the methodology illustrated in figure 1:



## 9. MONITORING / AUDITS (PREVENTATIVE TASKS)

The Trust will:

- Always ensure that the system is kept up to date with the suppliers recommendations, undertaking necessary software updates to ensure that the system continues to be supportable within contractual agreements.
- Attend regular user group meetings and take any preventative measures to avoid disruption to services where possible.
- Ensure that the servers are backed up at regular intervals in line with the software supplier's recommendations.
- Liaise with modality leads to ensure that departments are aware of their own responsibilities during downtime periods and ensuring that all relevant procedures are in place.

## 10. DISSEMINATION, IMPLEMENTATION AND ACCESS TO THIS DOCUMENT.

- This document will be uploaded onto the Radiology Q-Pulse system and circulated to all staff.

## APPENDIX A



<p><b>DIRECTORATE OF RADIOLOGY</b></p> <p><b>TITLE: Sectra PACS Business Continuity and Disaster Recovery Plan.</b></p>	<b>Doc No.</b>		PACS25	
	<b>Issue No.</b>		1	
	<b>Issue Date</b>		27.12.19	
	<b>Review Date</b>		03/10/22	
	<b>Originator</b>		LB	
	<b>Page</b>	- 9 -	<b>of</b>	15

**PACS DOWNTIME PROCESS AND BUSINESS CONTINUITY PLAN**

Checks to confirm that PACS is down:

- PACS will not load images for several different patients
- PACS will not load images on different PCs / workstations
- Users are unable to log onto PACS or user can log on to PACS but unable to search for patients.
- If the images are failing to send to the modality, confirm other modalities are working as expected and restart the modality. If all images are failing then contact the PACS team. If out of hours, the senior radiographer logs a call with the Siemens helpdesk on the telephone numbers below:

**If PACS is down in hours (08:00 – 17:00 Mon- Fri):**

- Inform the PACS Team.
- If no members of the PACS Team are in office then inform the Band 7's / senior radiographer.
- PACS Team/ Senior radiographer to contact the Sectra helpdesk:

**Sectra helpdesk: 0800 29 22 044**

- PACS Team/Senior Radiographers to inform IT and the relevant areas eg. Fracture Clinic, ED.
- CDs to be created for Ward patients, Clinics, ED, and Outpatient (and any other relevant area) during the downtime; the CDs will be sent back with the patient.
- When PACS is back up and running, the Senior radiographers are to ensure that all imaging done during downtime is re-sent to PACS and that the imaging is available in PACS.
- PACS team/Band 7's to ensure all areas are aware PACS is back up and running.

**If PACS is down out of hours:**

- Senior radiographer to contact the Siemens helpdesk:

**Sectra helpdesk: 0800 29 22 044**

<b>DIRECTORATE OF RADIOLOGY</b>  <b>TITLE: Sectra PACS Business Continuity and Disaster Recovery Plan.</b>	<b>Doc No.</b>		PACS25	
	<b>Issue No.</b>		1	
	<b>Issue Date</b>		27.12.19	
	<b>Review Date</b>		03/10/22	
	<b>Originator</b>		LB	
	<b>Page</b>	- 10 -	<b>of</b>	15

- Senior in charge to contact IT and the Bed Manager on-call and inform them PACS is down.
- CDs to be created for Ward patients, Clinics, A&E, and Outpatient (and any other relevant area) during the downtime; the CDs will be sent back with the patient.
- When PACS is back up and running, the Seniors are to ensure that all imaging done during downtime is re-sent to PACS and that the imaging is available in PACS.
- Seniors to ensure all areas are aware PACS is back up and running and to inform the Bed manager on-call.

## **APPENDIX B**

### **TRIGGER POINT ACTIONS**

#### **Trigger Point 1**

##### **Action: PACS team**

- In conjunction with IT Department Heads organise initial information gathering meeting to establish:
  1. Impact of service failure
  2. Initiation of CD burning
  3. Notification of updates
  4. Agree catch up plans
  5. Notification and communication of any associated downtime to the rest of the organisation.
  6. Arrange next actions and follow up meeting if appropriate (trigger point 2 or 3)

#### **Trigger Point 2**

##### **Action: PACS team**

- Conference Call/meeting set up for progress/restoration of service update involving the following as appropriate:
  1. Siemens /Sectra
  2. IT Services
  3. Departmental Managers
  4. System Support Team
  5. Catch Up planning
  6. Information Services
  7. Interface Administrators

<b>DIRECTORATE OF RADIOLOGY</b>  <b>TITLE: Sectra PACS Business Continuity and Disaster Recovery Plan.</b>	<b>Doc No.</b>		PACS25	
	<b>Issue No.</b>		1	
	<b>Issue Date</b>		27.12.19	
	<b>Review Date</b>		03/10/22	
	<b>Originator</b>		LB	
	<b>Page</b>	- 11 -	<b>of</b>	15

8. Information should be agreed and co-ordinated from this meeting (including a daily briefing prepared for the e-Health Board & relevant management bodies)

***Trigger Point 2 should be continued on an agreed basis until the system is back up and running or if services are not restored after 5 days.***

**Trigger Point 3**

**Action: PACS team**

- Once it has been established the system is back up and running the following steps should be undertaken as appropriate:
  - Test system ensure data is restored as expected in conjunction with modality leads and departmental managers.
  - Inform users that service is restored
  - Inform Interface Administrators and commence testing of interface
  - Lessons Learned document produced

**Trigger Point 4**

**Action: PACS team**

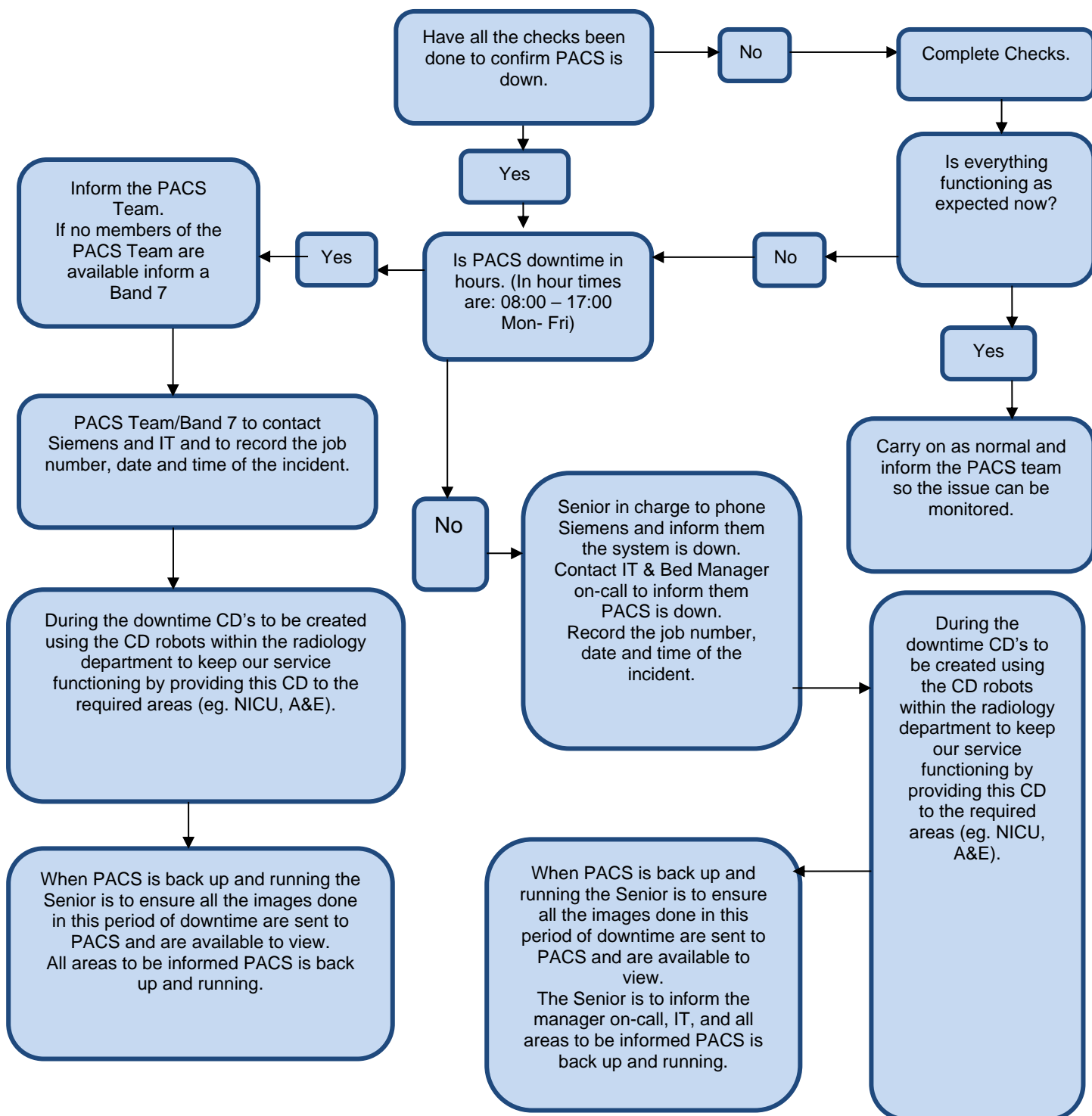
- After five days limited/full services should be restored. If the system is still unavailable after day 5 serious service disruption should be expected from day 7 which will need to be planned for:
- Emergency meeting to be arranged consisting of:
  - Departmental Managers
  - Senior Managers from within the Trust as appropriate
  - IT Services
  - IM&T Board Members
  - Interface Administrators
  - System Administrators

This meeting would co-ordinate the trust response to the system failure and recommend ways forward until the issues have been resolved.

<b>DIRECTORATE OF RADIOLOGY</b>  <b>TITLE: Sectra PACS Business Continuity and Disaster Recovery Plan.</b>	<b>Doc No.</b>		PACS25	
	<b>Issue No.</b>		1	
	<b>Issue Date</b>		27.12.19	
	<b>Review Date</b>		03/10/22	
	<b>Originator</b>		LB	
	<b>Page</b>	- 12 -	<b>of</b>	15

**APPENDIX C**

**FLOW CHART TO FOLLOW IN THE EVENT OF PACS DOWNTIME**



<b>DIRECTORATE OF RADIOLOGY</b>  <b>TITLE: Sectra PACS Business Continuity and Disaster Recovery Plan.</b>	<b>Doc No.</b>		PACS25	
	<b>Issue No.</b>		1	
	<b>Issue Date</b>		27.12.19	
	<b>Review Date</b>		03/10/22	
	<b>Originator</b>		LB	
	<b>Page</b>	- 13 -	<b>of</b>	15

**APPENDIX D**

**CONTACT DETAILS**

**PACS TEAM:**

Radiology IT Systems and Performance Manager / PACS & RIS Manager:

Tel: 01254 734451 ext 84451

Out of hours (Senior Radiographer):

Tel: 01254 733149 ext 83149

**X-RAY VIEWING AREA:**

Senior Radiographer:

Tel: 01254 733149 ext 83149

**ELHT IT service desk:**

Monday- Friday :

Tel: 01254 733135 ext83135

Out of hours:

Contact switchboard.

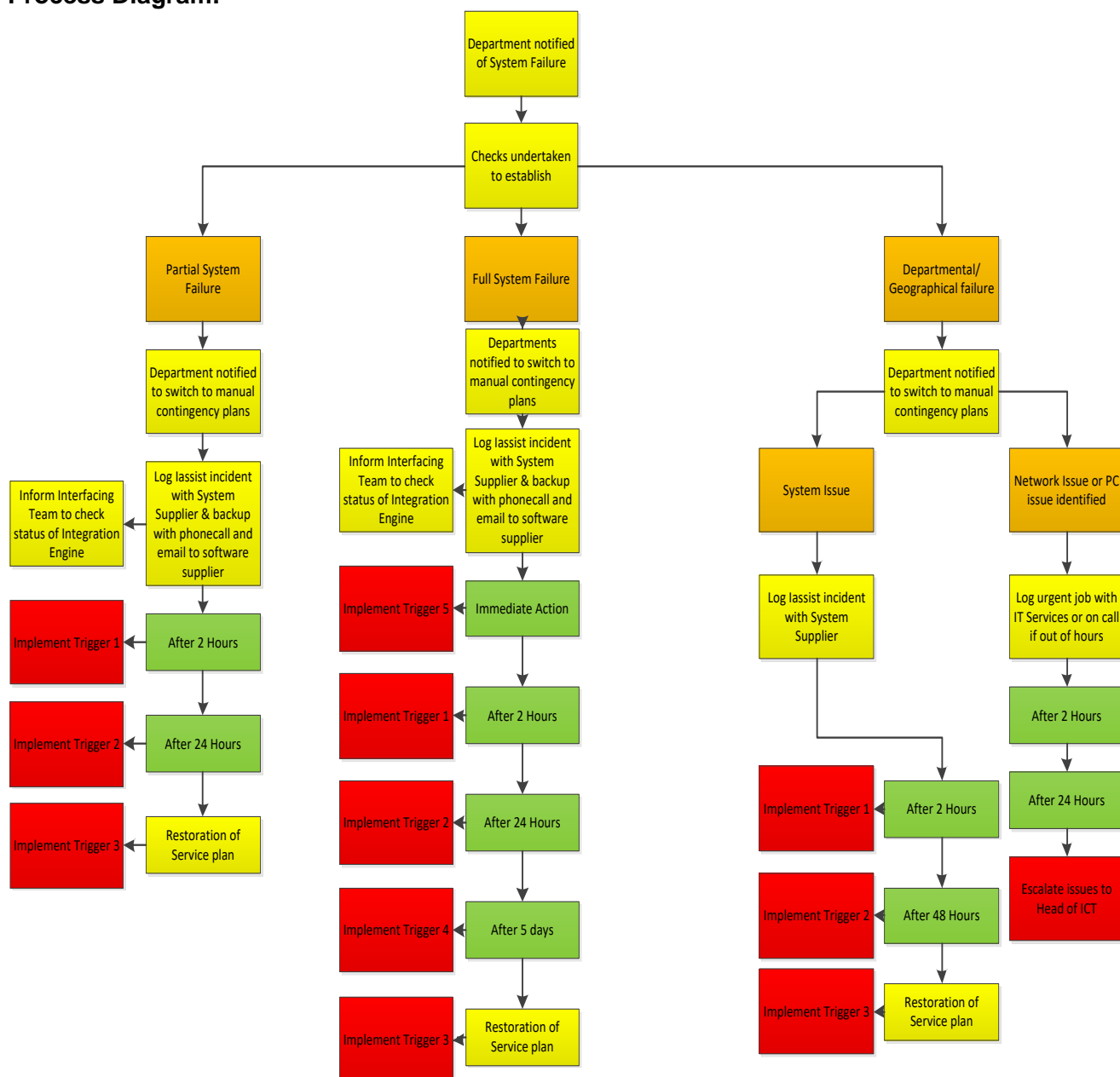
**SIEMENS /SECTRA:**

**Sectra helpdesk: 0800 29 22 044**

<b>DIRECTORATE OF RADIOLOGY</b>  <b>TITLE: Sectra PACS Business Continuity and Disaster Recovery Plan.</b>	<b>Doc No.</b>		PACS25	
	<b>Issue No.</b>		1	
	<b>Issue Date</b>		27.12.19	
	<b>Review Date</b>		03/10/22	
	<b>Originator</b>		LB	
	<b>Page</b>	- 14 -	<b>of</b>	15

**APPENDIX E**

**Process Diagram:**



<b>DIRECTORATE OF RADIOLOGY</b>  <b>TITLE: Sectra PACS Business Continuity and Disaster Recovery Plan.</b>	<b>Doc No.</b>		PACS25	
	<b>Issue No.</b>		1	
	<b>Issue Date</b>		27.12.19	
	<b>Review Date</b>		03/10/22	
	<b>Originator</b>		LB	
	<b>Page</b>	- 15 -	<b>of</b>	15

## APPENDIX F

### Sectra Hardware Configuration:

The hardware configuration is based upon the datacentres running in the most part as an ACTIVE – PASSIVE capacity and with there being a Primary datacentre and a backup data centre. However, some stateless services will run in an ACTIVE-ACTIVE capacity to improve performance during normal operation. Additionally, SQL database instances will run under an SQL always-on cluster, with the cluster and role services running in the Primary datacentre under normal operations. On this basis, the following is assumed as the design:

- VmWare Recoverpoint4VM's implemented on all servers that are deemed to be vital to the PACS performance running in a ACTIVE-PASIVE capacity. In the event of a datacentre failover from the Primary to the backup datacentre some functionality / systems may not be available.
- Stateless servers running in an ACTIVE-ACTIVE capacity will leverage performance from both datacentres. In the event of one datacentre being unavailable performance will be reduced.
- SQL always-on clusters require that both nodes in each cluster in each datacentre be active at all times with a third file witness server. In the event of one datacentre being unavailable the file witness and the available datacentre will determine the location of the running cluster services. With this in mind the file witness server should be outside of both the Sectra supplied hardware environments. Recommendation would be for the Trust to supply a small virtual machine to act as the file witness preferably in a 3<sup>rd</sup> datacentre.
- Replication of storage at all storage tiers (1, 2 and 3) will be configured to be synchronous via the EMC Compellent system.

### VMWare Configuration:

As part of the delivery it is expected that all VMWare hosts that form the VMWare Recoverpoint4VM's solution will be dedicated to the PACS solution only.

As mentioned above it should be noted that the design is based around dual data centres. For resilience, the following SHOULD be considered:

- Dual EMC Compellent SANs are deployed with synchronous block level replication.
- It should be noted that the capacity of the virtual machines assumes that all
- ACTIVE-PASSIVE can run in the primary data centre and only the critical ACTIVE-PASIVE nodes will be able to run in the backup data centre in the event of a datacentre / hardware failure in DC1. Additionally, all ACTIVE-ACTIVE and SQL always-on nodes can run in either datacentre.

<p><b>DIRECTORATE OF RADIOLOGY</b></p> <p><b>TITLE: Sectra PACS Business Continuity and Disaster Recovery Plan.</b></p>	<b>Doc No.</b>		PACS25	
	<b>Issue No.</b>		1	
	<b>Issue Date</b>		27.12.19	
	<b>Review Date</b>		03/10/22	
	<b>Originator</b>		LB	
	<b>Page</b>	- 16 -	<b>of</b>	15

**Appendix G:**

**Sectra Backup Strategy:**



Sectra Backup Strategy