SIGNAL System

Final Internal Audit Report

July 2024

Swansea Bay University Health Board

GIG CYMRU NHS WALES
Partneriaeth Cydwasanaethau
Gwasanaethau Archwilio a Sicrwydd
Shared Services Partnership
Audit and Assurance Services

GIG CYMRU NHS WALES
Bwrdd Iechyd Prifysgol Bae Abertawe
Swansea Bay University Health Board

Contents

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Audit and Assurance Services conform with all Public Sector Internal Audit Standards as validated through the external quality assessment undertaken by the Chartered Institute of Public Finance & Accountancy in April 2023.

Acknowledgement:
NHS Wales Audit and Assurance Services would like to acknowledge the time and co-operation given by management and staff during the course of this review.

Executive Summary

Purpose

To provide assurance over the governance processes for the management and use of the SIGNAL system.

Overview

We have issued **reasonable** assurance on this area.

Our review highlighted that overall, the system is robust and supported by effective controls.

The matters requiring management attention are as follows:

- Whilst a change management process is in place with the User Group acting as a Change Advisory Board, papers and minutes were not provided during our fieldwork, therefore, we were unable to verify;
- Testing of current SIGNAL users noted employees with access that no longer work for the health board; and
- Business Continuity Plans may not include sufficient detail to capture all required information for crucial patient management.

Other recommendations / advisory points are within the detail of the report.

Report Opinion

		Trend
Reasonable 	Some matters require management attention in control design or compliance. Low to moderate impact on residual risk exposure until resolved.	N/A First Review

Assurance summary[1]

Objectives		
1	Governance process	Reasonable
2	Database controls	Substantial
3	Application access controls	Reasonable
4	Data and interface controls	Substantial
5	Disaster recovery and business continuity	Reasonable

[1]The objectives and associated assurance ratings are not necessarily given equal weighting when formulating the overall audit opinion.

Key Matters Arising

		Objective	Control Design or Operation	Recommendation Priority
1	Project Governance	1	Operation	Medium
2	User Access Management	3	Design	Medium
3	Business Continuity Plans	5	Operation	Medium

1. Introduction

1.1 Swansea Bay University Health Board (the 'health board' or 'organisation') has developed its own electronic system for patient flow, called SIGNAL, to improve patient safety and remove delays in patient care. SIGNAL keeps a digital eye on patients from their admission to hospital, to their discharge. It makes staff involved in their care aware of any support they need to leave hospital as soon as they can. This includes details of a package of care they might need before they can leave.

1.2 The system is used across the health board, and is available to Social Services staff, to support on-line board rounds carried out by clinicians looking after patients. It means every member of the team involved in a patient's care has the information available digitally, in real time, no matter where they may physically be.

1.3 SIGNAL also provides hospital management with an overview of what's going on in all the clinical areas. It gives vital real-time information about capacity across all health board sites and helps to identify areas which may require additional support.

1.4 SIGNAL was originally developed using SharePoint but has been redeveloped as a .net system and was re-launched as such in March 2023 with a redesigned interface and additional integrations with the national clinical portal (WCP).

1.5 The potential risks considered as part of this review were as follows:

- inappropriate access to the system / data;
- inaccurate data held in the system;
- inaccurate data reported from the system; and
- loss of processing / data.

2. Detailed Audit Findings

2.1 The table below summarises the recommendations raised by priority rating:

	Recommendation Priority			Total
	High	Medium	Low	
Control Design	-	2	3	5
Operating Effectiveness	-	2	-	2
Total	-	4	3	7

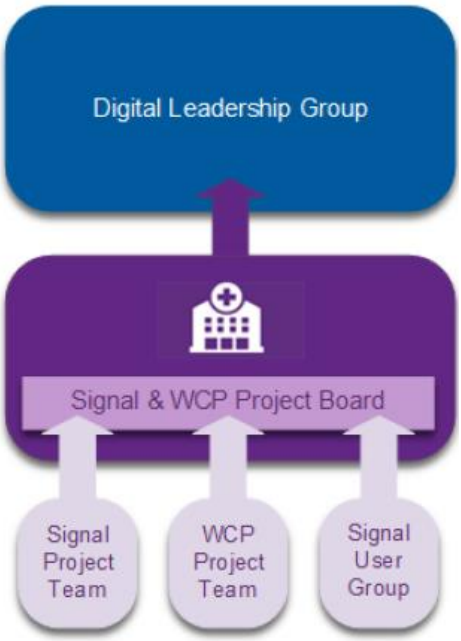
2.2 Our detailed audit findings are set out below. All matters arising and the related recommendations and management actions are detailed in Appendix A.

Objective 1: An appropriate governance process is in place for the system and any changes.

SIGNAL System

2.3 SIGNAL v.3 provides a real-time digital map of hospital patient flow from admission through to discharge in a single view. Healthcare professionals can observe key information such as bed status, clinical information, outstanding nursing tasks and discharge plans on digital whiteboards, which are automatically updated within 2 minutes of information being inputted into SIGNAL. The solution features reverse stapling to the Welsh Clinical Portal (WCP), where users are able to navigate to the Welsh Nursing Care Record (WNCR) and Hospital Electronic Prescribing and Medicines Administration (HEPMA) by clicking a button against a patient within SIGNAL. The system will authenticate the user and display the selected patient for the user to check blood results and previous clinical documents.

2.4 The solution is deployed across wards in Singleton, Morriston, Neath Port Talbot and Gorseinon hospital sites, and is also used within the Home First Team, Social Services, Mental Health & Learning Disabilities and Mortuary services. Scoping of maternity and virtual wards is in progress for implementation in future releases. SIGNAL continues to be in its project phase and is supported by a Project Team, User Group and Project Board, which oversee the project in its entirety.



Governance

2.5 Our review highlighted that SIGNAL is well-regarded within the health board, and user engagement is high. There is a dedicated intranet page which provides comprehensive learning and guidance on the system's use, including a Frequently Asked Questions page where staff can find information on how to request access and changes to the system.

2.6 Our review of Project Board papers noted good detail being reported relating to the SIGNAL project, inclusive of highlight reports, release plan updates, action logs, risks and issues updates, and benefits realisation reporting. The Project Board's Terms of Reference (ToR) state that the Board will meet every three months, however, our review noted that prior to May 2024, the Board last met in June 2023, as the scheduled February 2024 meeting was cancelled.

2.7 We note that a change management process is in place. The User Group represents users in the continuous improvement and development of SIGNAL and acts as a Change Advisory Board (CAB). All requests for change must be submitted through a dedicated 'Request for Change' form, which requires details such as benefits and measurements, and how the change aligns to the requesting Service's Integrated Medium-Term Plan (IMTP). The request is then assessed against a technical matrix by the Product Specialist, Lead Digital Architect and Lead Developer prior to proposal to the User Group. If approved, the request is presented to the Project Board for final sign-off and submitted to the Development Team for inclusion within their workplan. A priority rating is assigned for allocation within the Project Team's backlog.

2.8 Our review of Project Board papers from June 2023, February 2024 and May 2024 noted no changes were presented for sign-off. We requested papers from the User Group and Project Team meetings, however, we were not provided with them during our fieldwork. As the User Group acts as the CAB for SIGNAL, we would expect formal minuting of these meetings. We acknowledge that the Project Team meet three times a week and formal minuting of these meetings would not be necessary, however, we would expect to see actions being captured as a minimum. **See Matter Arising 1 at Appendix A**.

Conclusion:

2.9 Whilst a good governance structure is in place and we observed evidence of good reporting to the Project Board, we were unable to fully verify the governance arrangements in place as we were not provided with the full suite of meeting papers requested. Consequently, we have concluded **reasonable** assurance for this objective.

Objective 2: Appropriate control is maintained over the database.

2.10 We positively note that the current version of SIGNAL is installed on Microsoft SQL Server 2019, which continues to be fully supported by Microsoft and receives regular Windows security patches, thus ensuring the database is up-to-date.

2.11 Robust database access controls are in place, through which back-end access is appropriately restricted to the Development Team, with a limited number of Software Developers having individual system accounts separate to their user accounts. Two senior members of the Digital Team have elevated account privileges separate to their standard user accounts, which are used for regular system interrogation and detailed testing purposes. Through our user testing as

part of objective 3, we verified that the elevated account status was limited to the expected members of the Digital Team.

2.12 The database is monitored through SolarWinds (IT Service Management tool) to ensure optimised database health and performance. A Database Analyst within the Digital Team is responsible for monitoring overall performance of SIGNAL, such as ensuring the database has adequate disk space to avoid data loss / corruption. Reports from SolarWinds noted no alerts or issues at the time of fieldwork.

Conclusion:

2.13 Our review highlighted that the system is securely hosted, and appropriate control is exercised over access to the database and its continued maintenance. Accordingly, we have concluded **substantial** assurance for this objective.

Objective 3: Proper control is exercised over access to application systems.

2.14 As noted under objective 1, staff who wish to access SIGNAL must submit a request through the health board's IT Helpdesk. Requests are then assessed by Digital Services for appropriateness and relevant role-based access is granted if applicable. In order to access SIGNAL, staff must utilise their NHS Wales digital identity, i.e. Cymru ID username and password (NADEX).

2.15 The following roles are available within SIGNAL:

Admin / Reception
Clinical Manager
Doctors
Healthcare Support Worker
Mortuary Staff
Non-Clinical Manager
Nurses / Specialist Nurses
Patient Affairs
Patient Flow
Pharmacy
Read Only
Search Read Only (Find My Patient)
SIGNAL Admin
Social Services Users Neath Port Talbot
Social Services Users Swansea
Therapist

2.16 Each role has set privileges, which allow or restrict users from viewing, inputting, and editing certain information within SIGNAL. For example, Mortuary records can only be accessed by users with 'Mortuary Staff' privileges.

2.17 SIGNAL is integrated with the Active Directory (AD) which offers enhanced security over user management and access control. We noted an area of good practice whereby a digital Locum Portal has been developed by Digital Services and the Workforce & Organisational Development (WOD) Team, which allows locum and

agency staff to be assigned temporary AD accounts and which provides audit trails of system logins including SIGNAL that can be traced back to the user.

2.18 As per the health board's Information Security Policy, line managers are responsible for ensuring that local procedures are followed when any member of staff leaves or moves roles to ensure that their user AD accounts are disabled or amended as required. Due to its integration with the AD, access to SIGNAL will then be automatically denied.

2.19 We were provided with a list of current SIGNAL users, of which there were 9,304 at the time of fieldwork. We selected a sample of 100 users at random to undertake testing. Whilst all users tested had appropriate access levels relative to their roles, we noted that a total of 14 users no longer worked for the health board; 5 had either no AD record or no information recorded against them, and 9 had active records for other NHS Wales organisations. We also noted that 2 of these users had 'Signal Admin' access, of which 1 had an active AD record for another organisation. We determined that there was no legitimate business requirement for them to have continued access, and Digital Services confirmed that all necessary action will be undertaken to update their records on SIGNAL and confirm their AD status. We further selected a random sample of 10 temporary locum / agency login records and requested the corresponding user details. All but 1 record could be traced back to a user, and this is currently being investigated by Digital Services. **See Matter Arising 2 at Appendix A.**

2.20 From discussions held with Digital Services we understand that they are reliant on being directly informed by respective managers of staff who leave the health board or change roles, in order to update their record within SIGNAL. Further reliance is placed on wider health board processes being followed in a timely manner to ensure their AD accounts are disabled or appropriately amended, thus automatically denying access to SIGNAL. We were informed by Digital Services that this is a known weakness and work is underway with WOD to improve the wider processes around new starters, leavers, and movers.

Conclusion:

2.21 Our review highlighted that the provision of access to SIGNAL is appropriate, and robust role-based controls are in place. Whilst integration with the Active Directory offers enhanced security, there is a known weakness in so far as account revocation or amendment is dependent on wider health board processes relating to leavers and movers being appropriately followed. We note that work is being undertaken by Digital Services and WOD to make improvements to current arrangements. Accordingly, we have concluded **reasonable** assurance for this objective.

Objective 4: Controls ensure the accuracy, completeness, confidentiality and timeliness of data and interfaces.

2.22 Patient demographic data is integrated in SIGNAL from the Welsh Patient Administration System (WPAS). When a user registers or searches for a new patient on SIGNAL, the system calls the WPAS via a web service (method of

communication over a network), which returns the correct patient demographic data. Patient demographic details cannot be edited within SIGNAL.

2.23 Whilst users are able to manually add a patient within SIGNAL, if the record is not linked to a hospital number, the system will not allow admission of that patient. This is with the exception of the Mortuary element, as certain circumstances dictate a patient be recorded without demographics in the first instance. We noted that if a manually created patient record remains unlinked, it will stay in the database unless deleted.

2.24 At the time of fieldwork, only one orphan record was found, which had a status of cancelled. All Mortuary patient records were linked to a demographic record. Whilst we were informed that there is no formal schedule of data monitoring, regular interrogation is undertaken as evidenced by only one orphan record being found. We recommend that unlinked records within SIGNAL continue to be periodically reviewed and appropriately removed, to ensure that any future amendments to the system code does not result in orphan records inadvertently being linked in error.

2.25 SIGNAL offers audit functionality which records details such as dates and times of logins, searches, updates, and input commands against users. We observed evidence of this during our system walkthrough with the Software Development Manager and were informed that periodic checks are undertaken by Digital Services. Whilst SIGNAL does not hold patient medical records per se, as noted under objective 1, SIGNAL features reverse stapling to the WCP which allows users to access the WNCR and HEPMA. These are national health systems which are integrated with National Intelligence Integrated Audit Solution (NIIAS) which proactively monitors the use of health records and highlights potential misuse, therefore, a robust audit and monitoring process is place.

2.26 During our testing we found SIGNAL to be intuitive, structured, and user-friendly with a logical flow. Its design enables comprehensive patient information to be displayed in various views dependent on user role, which can be personalised within their account settings. Enhanced navigation bars allow users to quickly access specific areas of a patient's record and the extensive use of dropdown menus preserves the integrity of frequently inputted data.

2.27 We noted areas of good security practice such as inactivity logout timers, where users are automatically logged out after a short period of inactivity and users are prevented from having simultaneous active sessions, i.e., the same user cannot be logged into SIGNAL on more than one device at the same time.

2.28 Input controls help safeguard data quality. They are crucial for validation and verification as they ensure data's accuracy, completeness and authenticity as it enters the system. We tested the following controls and can confirm that they are in place:

- Format checks which confirm that data, such as date fields, is entered in the correct format and alerts users if entered incorrectly.

- Completeness checks which confirm that all required fields have been populated before a record can be saved or navigated away from.
- Duplication checks which prevent patients having more than one active admission.
- Validation checks which help reduce human errors, for example, dates and times of nursing observation tasks cannot be before the date of admission. Users are alerted if entered incorrectly.

2.29 Whilst testing range checks which ensure data falls within set parameters, we observed that there is no such control over manual entry of a patient's date of birth. As such we were able to add a patient of 222 years of age and also a date in the future without any flags. Whilst SIGNAL will not permit clinical patients to be admitted on the system without a linked demographics record, and by default dates of birth must match, we established that this is not the case for Mortuary patients. Implementing range validation through defined lower and upper boundaries for reasonable values helps to reduce the margin of error caused by mistypes and prevent outliers that may skew data analysis. **See Matter Arising 3 at Appendix A.**

2.30 As noted above, duplication checks are in place to prevent more than one active admission of a patient once they have been linked to a demographics record, however, the same checks have not been applied to manual patient entry. During testing we were able to manually enter the same patient details as two separate records without flags. As no evidence of duplicate patients was found within SIGNAL, we have raised a low priority matter arising where consideration should be given to applying the same duplication controls to manual patients. **See Matter Arising 3 at Appendix A.**

Conclusion:

2.31 Our review highlighted that various controls are in place to ensure the integrity of the data held within SIGNAL and we noted areas of good security practices. Accordingly, we have concluded **substantial** assurance for this objective.

Objective 5: Appropriate business continuity arrangements are in place which include provision of a paper-based fall-back, backing up copies of data and programs, storing and retaining them securely, and recovering applications in the event of failure.

Disaster Recovery

2.32 A Disaster Recovery Plan (DRP) is in place which outlines the procedures to follow for recovering the system, its data, and infrastructure in the event of a disaster. SIGNAL has a resilient architecture and is installed on virtual servers, with identical infrastructure hosted in different physical locations within the health board.

2.33 We note that the DRP provides information on data backup and recovery, data storage, emergency response, and system restoration. It sets out the roles, steps, and tools required to get SIGNAL functioning rapidly after disruptions such as cyber attacks, equipment failures, or natural disasters. The DRP provides clear

information on the Recovery Point Objective (RPO) and Recovery Time Objective (RTO), which can be defined as the maximum amount of data, as measured by time, that can be lost after a recovery from a disaster, failure, or comparable event before data loss will exceed what is acceptable to the health board.

2.34 We have recently reviewed the health board's data backup and recovery processes in detail as part of the Cyber Security and Technical Resilience audits undertaken during 2022/23 and 2023/24. The objectives relating to backups were assigned reasonable assurance and substantial assurance respectively.

2.35 Backups of SIGNAL data are in line with the health board's Backup Policy. Full virtual machine backups and independent SQL database backups are taken daily using the Commvault platform and are retained for 3 months offsite. The SQL databases for SIGNAL have an additional layer of resilience through transaction log shipping directly to the failover server every 30 minutes 24/7. We observed evidence of good Commvault monitoring and noted no errors within log files. Further to this, the health board recently underwent an independent health check review of backup processes, undertaken by 'COOLSPIRiT' consultancy, which confirmed that Commvault was well configured, and its operation was consistent with accepted best practice.

Business Continuity

2.36 A Business Continuity Plan (BCP) outlines the procedures and processes Services will follow in the face of disruptive events. Its primary goal is to ensure the uninterrupted availability of identified critical functions and should encompass risk assessments, resources, roles and responsibilities, communication, and steps to resume the functions after a disruption.

2.37 We were informed that an overarching health board BCP is in place, which outlines command and control arrangements and escalation processes. Each Service Delivery Group holds a central repository of their BCP's in addition to being retained by each Service. In terms of SIGNAL, we were informed that in the event of a planned or unplanned outage, hospital wards will resort to their last patient print out, which are periodically printed throughout the day and night, to manage patient flow. SIGNAL will then be updated to reflect changes once fully operational. We were provided with an example of a hospital ward BCP, which our review noted to be basic in nature. It contains an action plan for general IT failures, and whilst immediate actions state to manually document patient admissions, discharges, and transfers, this may not be sufficient to capture all required information for crucial patient management. We acknowledge that Digital Services are not responsible for business continuity arrangements in other service areas, however, as part of their professional leadership role, it would be prudent to remind services of the importance of maintaining an up-to-date and detailed BCP to promote continuity and rapid recovery of critical functions. **See Matter Arising 4 at Appendix A.**

Conclusion:

2.38 A DRP is in place for SIGNAL which provides the necessary information to quickly recover following a disaster, failure, or comparable event. A Backup Policy is also

in place, supplemented by a formal process for taking backups and testing their validity. We established that business continuity arrangements for SIGNAL include resorting to printouts to manage patient flow and whilst we were provided with an example plan that supports this process, we noted that it could be strengthened to sufficiently capture all required information for crucial patient management. Consequently, we have concluded **reasonable** assurance for this objective.

Appendix A: Management Action Plan

Matter Arising 1: Project Governance (Operation)			Impact
We noted a good governance structure is in place inclusive of a SIGNAL Project Team, User Group and Project Board. The Project Board's Terms of Reference (ToR) state that the Board will meet every three months, however, our review noted that prior to May 2024, the Board last met in June 2023. Our review of Project Board papers noted a good level of reporting relating to the SIGNAL project. Whilst a change management process is in place inclusive of a change request form, we have been unable to verify its robustness as we were not provided with papers and minutes from the User Group, which acts as a Change Advisory Board (CAB) for the project. We noted no evidence of changes being reported to and signed-off by the Project Board in our review.			Potential risk of: • inappropriate access to the system / data; • inaccurate data held in the system; • inaccurate data reported from the system; and • loss of processing / data.
Recommendations			**Priority**
1.1	Management should ensure that robust governance arrangements are in place in line with the established structure, and that formal minutes and actions are recorded in the User Group meetings.		**Medium**
Agreed Management Action		**Target Date**	**Responsible Officer**
1.1	Agreed. The governance arrangements for Signal are currently under review and new arrangements will be agreed and implemented. We will ensure that appropriate and proportionate documentation and records are created and maintained for all meetings.	30th September 2024 (end of Q2)	Interim Head of Digital Applications / Head of Digital Planning for Patient Flow and Diagnostics

Matter Arising 2: User Access Management (Design)	Impact
We were provided with a list of current SIGNAL users, of which there were 9,304 at the time of fieldwork, and selected a random sample of 100 users to undertake user testing. We noted that a total of 14 users no longer worked for the health board; 5 had either no Active Directory (AD) record or no information recorded against them, and 9 had active records for other NHS Wales organisations. We also noted that 2 of these users had 'Signal Admin' access, of which 1 had an active AD record for another organisation. We further selected a random sample of 10 temporary locum / agency login records and requested the corresponding user details and noted that 1 record could not be traced back to a user. Whilst access to SIGNAL is determined by a user's AD account status, it is dependent on wider health board procedures being followed correctly and in a timely manner. Work to improve procedures around new starters, leavers and movers is currently being progressed with WOD.	Potential risk of: • inappropriate access to the system / data.

Recommendations		Priority
2.1	Management should ensure that a review of current user accounts in SIGNAL is undertaken, and should leavers and/or movers be identified, their accounts appropriately managed and disabled as required.	**Medium**
2.2	Periodic reviews of SIGNAL users should be undertaken in conjunction with Workforce & OD to safeguard the system against unauthorised access whilst work to improve wider health board processes is progressed.	

Agreed Management Action		Target Date	Responsible Officer
2.1	To address this a console application will be developed which will run nightly to review the membership of the AD group that grants access to Signal. This will then disable any account in Signal that does not exist in the AD group.	31st July 2024	Software Development Manager
2.2	The console application will reflect the processed leavers from AD on a daily basis and monitoring of the applications success will then form part of the daily checks performed by the Software Development team.	31st July 2024	Software Development Manager

Matter Arising 3: Range Validation & Duplication Controls (Design)	Impact
Whilst testing range checks which ensure data falls within set parameters, we observed that there is no such control over manual entry of a patient's date of birth. As such we were able to add a patient of 222 years of age and also a date in the future without any flags. Whilst SIGNAL will not permit clinical patients to be admitted on the system without a linked demographics record, and by default dates of birth must match, we established that this is not the case for Mortuary patients. Implementing range validation through defined lower and upper boundaries for reasonable values helps to reduce the margin of error caused by mistypes and prevent outliers that may skew data analysis. Duplication checks are in place to prevent more than one active admission of a patient once they have been linked to a demographics record, however, the same checks have not been applied to manual patient entry. During testing we were able to manually enter the same patient details as two separate records without flags.	Potential risk of: • inaccurate data held in the system; and • inaccurate data reported from the system.

Recommendations		Priority
3.1	Management should consider implementing date of birth validation for patients entered manually within SIGNAL.	**Low**
3.2	Management should consider implementing duplication controls for patients entered manually within SIGNAL.	
3.3	Management should consider running exception reports periodically and share with Services to correct and resolve any outliers.	

Agreed Management Action		Target Date	Responsible Officer
3.1	Agreed. Date of birth validation can be delivered within version 3.4 which is due for release in Q3 (date yet to be agreed).	31st December 2024	Software Development Manager
3.2	When Signal is able to process ADTs from WPAS, it is anticipated that patients would no longer need to be entered manually other than in Mortuary. Patients who would need to be entered manually are those who cannot be identified at admission and, as per the current Unknown Patients process, they will have a	31st March 2025	Interim Head of Digital Applications / Assistant Director of Digital Transformation

	temporary record in WPAS and be admitted in Signal under that record. ADT functionality in Signal is scheduled to be developed in Q4. If the functionality to create patients manually outside of Mortuary is still required post the implementation of ADT functionality, then we will incorporate duplication controls as per this recommendation.		
3.3	Since the functionality to allow patients to be created manually has been introduced, it has only been used once outside Mortuary. A PowerBI report will be created that shows use of this function. The Product Support team will run this routinely and communicate with services if any issues arise.	31st July 2024	Software Development Manager

Matter Arising 4: Business Continuity Plans (Operation)			Impact
In terms of SIGNAL, we were informed that in the event of a planned or unplanned outage, hospital wards will resort to their last patient print out, which are periodically printed throughout the day and night, to manage patient flow. SIGNAL will then be updated to reflect changes once fully operational. We were provided with an example of a hospital ward BCP and noted that it contained a basic action plan to follow in the event of IT failures. Whilst immediate actions state to manually document patient admissions, discharges, and transfers, this may not be sufficient detail to capture all required information for crucial patient management. We acknowledge that Digital Services are not responsible for business continuity arrangements in other service areas.			Potential risk of: • inappropriate access to the system / data; • inaccurate data held in the system; • inaccurate data reported from the system; and • loss of processing / data.
Recommendations			**Priority**
4.1	As Digital Leaders, the digital team should remind service areas of the importance of maintaining up-to-date and comprehensive BCP's to promote continuity and rapid recovery of critical functions and seek confirmation that these are in place as appropriate.		**Medium**
Agreed Management Action		**Target Date**	**Responsible Officer**
4.1	The EPRR is the strategic group for emergency preparedness, response and recovery for the Health Board - set up to meet the HBs requirement as a Category One responder under the Civil Contingencies Act. This group requires that all services have available and tested business continuity management plans in place for services that provide patient care. Digital Services are part of that group and regularly promote the importance of BCPs across all areas of the Health Board. We will continue to do this. In addition to the EPRR group, there are also regular Digital meetings with each Service Delivery Group. We will ensure that this is raised at the next occurrence of each of these meetings.	31st August 2024	Interim Head of Digital Applications

Appendix B: Assurance opinion and action plan risk rating

Audit Assurance Ratings

We define the following levels of assurance that governance, risk management and internal control within the area under review are suitable designed and applied effectively:

	**Substantial assurance**	Few matters require attention and are compliance or advisory in nature. **Low impact** on residual risk exposure.
	**Reasonable assurance**	Some matters require management attention in control design or compliance. **Low to moderate impact** on residual risk exposure until resolved.
	**Limited assurance**	More significant matters require management attention. **Moderate impact** on residual risk exposure until resolved.
	**Unsatisfactory assurance**	Action is required to address the whole control framework in this area. **High impact** on residual risk exposure until resolved.
	**Assurance not applicable**	Given to reviews and support provided to management which form part of the internal audit plan, to which the assurance definitions are not appropriate. These reviews are still relevant to the evidence base upon which the overall opinion is formed.

Prioritisation of Recommendations

We categorise our recommendations according to their level of priority as follows:

Priority level	Explanation	Management action
High	Poor system design OR widespread non-compliance. Significant risk to achievement of a system objective OR evidence present of material loss, error or misstatement.	Immediate*
Medium	Minor weakness in system design OR limited non-compliance. Some risk to achievement of a system objective.	Within one month*
Low	Potential to enhance system design to improve efficiency or effectiveness of controls. Generally issues of good practice for management consideration.	Within three months*

* Unless a more appropriate timescale is identified/agreed at the assignment.

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