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Document Approval

I, the undersigned have approved this document

POSITION/TITLE	NAME	SIGNATURE	DATE
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Executive Summary

This report outlines the three options to deliver the core HIN supported ICT applications to Fiona Stanley Hospital (FSH) and provides an update on the progress of the FSH IT program for December 2012.

The options for delivering an ICT solution for Fiona Stanley Hospital include:

1. Establishing the digital hospital.
2. Partially establishing the foundations of a digital hospital, as well as replicating some of the ICT components currently being used at Royal Perth Hospital.
3. Replicating all of the ICT components/technology currently being used at Royal Perth Hospital.

An initial analysis of the options has been completed with the following conclusions:

- To achieve any of the options will require additional funding.
- Option 1 is anticipated to be more expensive than Option 2 and is unachievable in the timeframe required.
- Option 3 has yet to have detailed costings, but is likely to be at least as expensive as Option 2 (from an ICT perspective), and potentially significantly more expensive when facility changes are considered, and again to be unachievable in the timeframe required.

As previously recommended by the FSH ICT Commissioning Control Group and agreed on the 13 December 2012, HIN has proceeded with Option 2 based on the assumption that additional funding will be made available and a more detailed analysis of Option 3 will be undertaken in parallel.

Whilst an initial assessment of the options has been completed, more detailed analysis is currently being undertaken to ensure that a functional and safe ICT solution can be delivered to FSH in the timeframe required. It is important to note that once Options 2 and 3 have been validated from an ICT perspective, a subsequent detailed impact assessment on the envisaged hospital operations/workflows, physical facility design (workstation, storage requirements, etc.), FM contract and workforce attraction will be required.

Options

Three options have/are being considered to deliver the core HIN supported ICT applications to FSH including:

1. Establishing the digital hospital.
2. Partially establishing the foundations of a digital hospital, as well as replicating some of the ICT components currently being used at Royal Perth Hospital[1].
3. Replicating all of the ICT components/technology currently being used at Royal Perth Hospital.

Option 1: Establishing the digital hospital.

Approach

- Upgrading existing applications to ensure stability;
- Full integration with the FM ICT solutions;
- Virtualisation of HIN and 200+ local hospital applications; and
- Completing the development and implementation of both new and existing applications.

The funding required to deliver this option has not been estimated as, regardless of the effort (time, resources and cost), this option is envisaged to take up to five years to achieve and will not meet the required April 2014 commissioning timeline.

Advantages	Disadvantages
Core Systems including Laboratories; PACS/RIS and EDIS systems delivered with improved performance and stability at FSH with flow on benefits across the state.	The full suite of applications previously described in the FSH ICT Solution is envisaged to take up to five years to deploy.
Full suite of applications deployed "virtually" to all "end user" devices, including Patient Entertainment System (PES).	Significant changes to clinicians' existing work practices.
"Paperless" hospital delivered.	Additional training of "end users" on new systems/technology.
Full integration with the FM ICT solutions including Enterprise Scheduling and Health Record Management.	Continued relance on legacy systems (Pathology, PACS/RIS, and Lattice) until replaced.
Full implementation of ICU and Closed Loop Medication Management	Double operational costs incurred whilst maintaining new and legacy systems (TOPAS, WeBPAS, Cloverleaf, ESB etc.).
No data migration	

1 The FSH ICT Status & Readiness Working Paper included with the Chief Executive FSH Commissioning Baseline Report dated 7/12/12, recommended to partially establish a digital hospital, as well as replicate some of the ICT components currently being used at an existing tertiary hospital.

Option 2:

Partially establishing the foundations of a digital hospital, as well as replicating some of the ICT components currently being used at Royal Perth Hospital.

Approach

- Prioritising effort on core critical systems;
- Minimising the amount of integration with the Facility Manager (FM);
- Upgrade of existing applications to ensure stability;
- Installing desk top computers/laptops to "load" applications that may not be virtualised in time;
- Completing the development and implementation of applications that can be achieved in time; and
- Transfer essential but less critical applications (in their existing form) to run on local desk top/laptop computers.

The funding required to deliver this option has been determined in Appendix 1.

Option 2 will:

- not deliver a fully commissioned, digital FSH, because not all of the key ICT applications will have completed development, testing and implementation by the planned April 2014 date;
- provide the building blocks for the envisaged digital hospital; and
- include a parallel process that explores options to deliver core HIN supported ICT applications to FSH, if any time related delays result during the upgrading and/or virtualising process (i.e. assessing if an existing version of an application can be deployed to a virtualised Windows 7 operating environment with all of its known issues and risks, including being unsupported by the software vendor).

Waiting for the outcomes of the options analysis to deliver core HIN supported ICT applications to FSH as outlined above, before a financial decision is made to proceed, would place the FSH commissioning schedule at greater risk. Therefore, the approach under Option 2 is to undertake three streams of work in parallel:

1. progress urgent and essential major work on PACS and LIS, as well as upgrades to EDIS and iPhamacy;
2. progress projects that are already funded; and
3. allocate additional funding to the Release Office to test and validate the alternative/risk mitigation options outlined above.

Not all of the requested $20M will be allocated to projects initially, allowing alternative options to be explored and decisions around further funding allocations (within the $20M) to be approved by the Director General and FSH ICT Commissioning Governance Committee.

Until full assessment is complete, and alternatives identified (by mid February 2013 at the latest), it is currently envisaged that a delay of 9 to 12 months is expected in order to achieve Option 2.

The impact of such a delay may be mitigated by phased introduction of the required IT systems over the period of the phased commissioning of services at FSH. For example, while the initial opening of the State Rehabilitation Service would require a suite of services (including PACS, LIS, WebPAS, iCM), it would not require all services (such as EDIS, TMS), which can be introduced in a staged way as required.

The impact assessment (time, costs, risks etc.) associated with changes to the envisaged hospital operations/workflows, physical facility design (workstation, storage requirements, etc.); FM contract and workforce attraction has not been undertaken and/or estimated.

Advantages	Disadvantages
Core Systems including Laboratories; PACS/RIS and EDIS systems delivered with improved performance and stability at FSH with flow on benefits across the state.	Minimal integration with the FM ICT solution requiring contract renegotiation.
Change to proposed virtualised deployment of applications requiring a physical installation of some software. The purchase and installation of desktop computers in addition to current "dumb" terminals.	Some modifications to the physical hospital design to accommodate modified ICT approach (workstations, central computer rooms).
Move from envisaged "paperless" hospital.	Modifications to the physical hospital design (workstations, medical records storage in wards/outpatients, additional records storage requirements/costs).
Some training of "end users" on new systems/technology as most FSH personnel relocating from existing sites.	No deployment of clinical systems to the PES.
ICT investment will allow transition to digital hospital over time.	Changes to the proposed FSH operations/workflows.
Mobile/wireless access retained.	Reduced political, clinical and FM expectations.
Reduced effort (time and cost) to define, configure and interface scheduling application with HIN applications.	Impact on clinical staff having to use both "fixed" and mobile technology.
Minimal change impact for clinicians	Increased manual "work arounds", reduced efficiencies, increased FM service cost charges.
No data migration	Additional funding required to achieve the full digital vision.
	No full enterprise scheduling.
	Continued reliance on legacy systems (Pathology, PACS/RIS, and Lattice) until replaced.
	Double operational costs incurred whilst maintaining new and legacy systems (TOPAS, WeBPAS, Cloverleaf, ESB etc.).

Option 3:

Replicating all of the ICT components/technology currently being used at Royal Perth Hospital.

Approach

- No integration with the FM ICT solution;
- Upgrade of existing applications to ensure stability;
- Installing Desk Top computers to "load" applications vs. virtualise; and
- Completing the development and implementation of applications that can be achieved in time.

The funding required to deliver this option has not been determined.

The impact assessment (time, costs, risks etc.) associated with changes to the envisaged hospital operations/workflows, physical facility design (workstation, storage requirements, etc.), FM contract and workforce attraction has not been undertaken and/or estimated at this point in time. The impact on physical facility design, in particular, is anticipated to be major, potentially requiring major re-cabling, purchase of large numbers of work stations and significant storage issues.

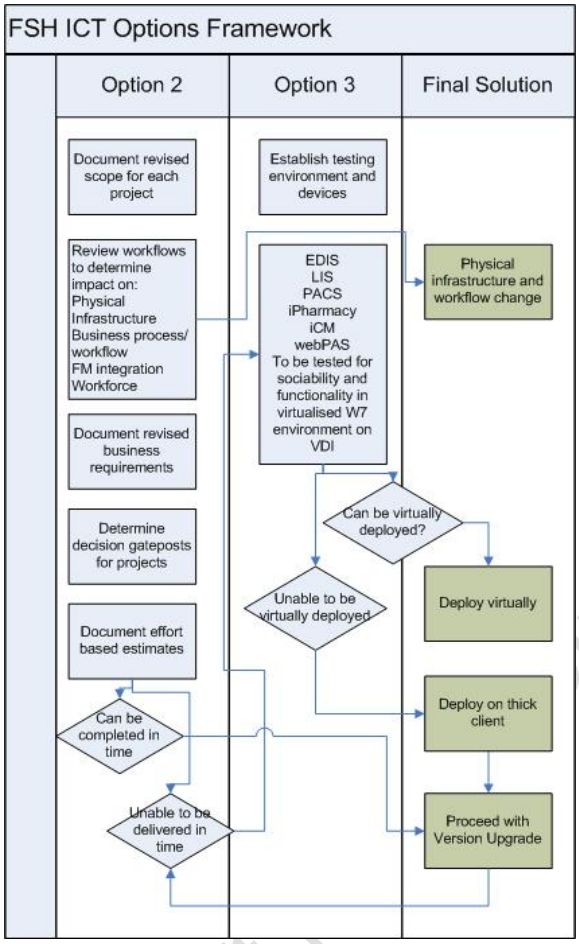
However, because of the significant building redevelopment required, it is envisaged that delays in opening the hospital could be up to 1-2 years and the ICT solution produced so inferior that it will require further significant investment to allow the hospital to achieve the original digital vision at a later date.

Advantages	Disadvantages
Core Systems including Laboratories; PACS/RIS and EDIS systems delivered with improved performance and stability at FSH with flow on benefits across the state.	No integration with the FM ICT solution requiring significant contract renegotiation.
Purchase and installation of desktop computers.	Significant modifications to the physical hospital design to accommodate ICT (workstations, computer rooms, cabling, storage requirements).
Minimal training of end users as most FSH personnel relocating from existing sites.	Significant modifications to the physical hospital design (workstations, medical records storage in wards/outpatients, additional records storage requirements/costs) estimated to take up to 1-2 years to complete.
Mobile/wireless access retained.	Significant changes to the proposed FSH operations/workflows.
Minimal change impact for clinicians.	Significantly reduced political, clinical and FM expectations.
No data migration.	Impact on clinical staff having to use both

Advantages	Disadvantages
	"fixed" and mobile technology, with multiple sources of information required.
	Significant manual "work arounds", reduced efficiencies, increased FM service cost charges.
	Significant additional funding required to achieve the digital vision.
	Continued relance on legacy systems (Pathology, PACS/RIS, and Lattice) until replaced.
	Incurring double operational costs whilst maintaining new and legacy systems (TOPAS, WeBPAS, Cloverleaf, and ESB).

Update on Implementation of Option 2 (as of 07 January 2013)

- "Health checks" of all FSH critical projects have now been completed and strategies developed to get projects "at risk" back on track.
- Work packages have been determined and allocated within HIN to ensure greater focus and accountability on the delivery of FSH. Documentation of the revised scope and requirements for all programs and projects has commenced and will be completed by end of February 2013.
- A framework has been developed to undertake initial and more detailed analysis of the solutions and risk mitigation strategies and work has commenced to implement the framework (see below).
- Vendors for existing core applications that require upgrade (EDIS, iPharmacy, PACS) have been contacted; however, work has not commenced due to the unavailability of vendors over the holiday period.
- All FSH documented workflows are in the process of being reviewed in order to identify impacts of implementation of Option 2 (see example at Appendix 2).
- Procurement for devices and environments for testing of HIN applications has commenced and will be completed within the next 2 weeks to enable existing core applications to be tested for sociability and functionality by mid-February in a virtualised, Windows 7 compliant environment.
- A HIN application testing schedule has been drafted but is still awaiting formal submission of the FM testing schedule to determine core dependencies.



Recommendation

That the Director General:

1. notes the FSH ICT Options;
2. notes the progress on Option 2, and that Option 2 remains the recommended option; and
3. progresses the allocation of the estimated additional $20 M in the 2012/2013 Financial Year (above the current $60M allocation) and an estimated additional $14.4M in the 2013/2014 Financial Year (above the $60M forward estimate allocation) to deliver the FSH ICT solution.

Appendix 1 FSH ICT Funding Estimate

	Project Name	Budget FY12/13	Total Cost FY12/13	Shortfall
Core Clinical				
	Patient Administration System	19,000,000	19,000,000	0
	Notifications and Clinical Summaries (NaCS)- *requires changes to implement medical documentation and complete electronic discharge prescriptions*	1,200,000	1,300,000	-100,000
	Clinical Workbench	3,100,000	3,100,000	0
	Order Entry	500,000	500,000	0
	EBM (Patient Flow)- *needs to be configured and enhanced for FSH*		433,500	-433,500
	Internal Referrals- *To include external referrals*	778,820	988,820	-210,000
	Cardiology (incl. Cardiobase and Prosolv)	635,500	585,500	50,000
	iCM Upgrade (v1.6)	594,300	594,300	0
	LIS Remediation- *as per section above*	150,000	1,423,000	-1,273,000
	CPOE Pathology Rollout- *To fix current issues with CPOE in ED and increase uptake*	25,641	686,000	-660,359
	Diet Management- *changes required to iCM*	0	45,000	-45,000
	Agfa PACS/RIS- *as discussed in previous section*	0	2,493,102	-2,493,102
	iPharmacy- *requires upgrade to enable pharmacy automation (single robot only)*	0	741,472	-741,472
	EDIS-*as discussed in section above*	0	450,000	-450,000
	TMS- *needs to be configured and enhanced for FSH*	0	661,000	-661,000
	SARC migration to PSOLIS	69,450	69,450	0
	WAND- *current instability and lag issues to be addressed*	0	250,000	-250,000
	ICU CIS	0	1,500,000	-1,500,000
Core Corporate				
	Patient Billing System	4,000,000	4,000,000	0
	Scanning and eForms- *includes state-wide procurement to enable viewing of scanned records at other sites*	1,600,000	1,631,225	-31,225
	WA Health Online- *needs to include clinical portal to ensure that WA Health applications can be made available on desktops and*	1,500,000	3,258,402	-1,758,402

	Project Name	Budget FY12/13	Total Cost FY12/13	Shortfall
	patient entertainment system			
	HR Info System & Payroll (Alesco/Lattice)- *Lattice to be configured for FSH*	1,200,000	1,825,826	-625,826
	OSH	0	0	0
	*ABM	1,667,000	1,667,000	0
	*AIMS (CIMS)	477,588	477,588	0
	*Credentialing	0	0	0
Enabling Technologies				
	Patient Context Sharing Platform (PCSP)- *this will allow clinicians to access multiple applications to undertake activities for an individual patient without the use of multiple log ons*	0	500,000	-500,000
	*MMex Transition Project	556,250	556,250	0
	Health Identifiers (Patient/Providers)	3,500,000	3,500,000	0
	Enterprise Service Bus (BUS) Enhancement	3,000,000	3,300,000	-300,000
	Existing Systems Remediation- *includes additional allocation to enable virtualisation*	1,923,321	2,643,321	-720,000
	Release Management Office- *as discussed in previous section*	1,108,467	7,140,000	-6,031,533
	Training- *no funds previously allocated for any training activities*	0	900,000	-900,000
	Vendor Requested Changes (Contingency)- *as discussed in previous section*	0	2,000,000	-2,000,000
Infrastructure				
	FSH – Infrastructure	1,256,000	1,256,000	0
	Data Centre	4,800,000	4,800,000	0
	End User Computing(MOE/SOE)	3,960,000	3,960,000	0
	Identity and Access Management (AD & SM)	2,100,000	2,100,000	0
	Subtotal	**58,702,337**	**78,836,756**	**-$21,634,419**
Program Management				
	PMO & Scheduling Services	5,500,000	5,500,000	0
	FSH Program (Prog Mgmt & Business Engagement)	3,635,533	3,635,533	0
Core Systems - Non FSH				
	Albany Health Campus	7,800,000	7,800,000	0
	Albany Health Campus PES	1,000,000	1,000,000	0
	New Children's Hospital	200,000	200,000	0
Other Projects				
	Balance of OPEX budget	2,226,223		2,226,223

	Project Name	Budget FY12/13	Total Cost FY12/13	Shortfall
	*Enterprise Bed Management (Tactical)	210,365	210,365	0
	CIS R3B Results Acknowledgement	0	2,772	-2,772
	Quality of Care Registry	6,195	6,195	0
	Broome Hospital Paediatrics & Mental Health	0	5,780	-5,780
	Laboratory Information System	0	25,236	-25,236
	Active Directory Redesign	0	27,152	-27,152
	SCGH Wireless LAN Implementation	0	103,672	-103,672
	Collaboration Platform	0	105,031	-105,031
	ICT Alliance Contract 'Dakota'	0	184,038	-184,038
	Facilities Development	0	11,972	-11,972
	Desktop Replacement Rollout	0	22,887	-22,887
	Contemporary Work Environment	0	49,859	-49,859
	Infrastructure Planning and Design	0	18,101	-18,101
	SCGH Radiation Oncology Citrix	0	9,847	-9,847
	Oracle eBusiness Suite Upgrade	0	8,669	-8,669
	Total	**79,280,653**	**97,763,866**	**-$19,983,213**

Appendix 2 FSH ICT Workflow Impact Analysis

Purpose

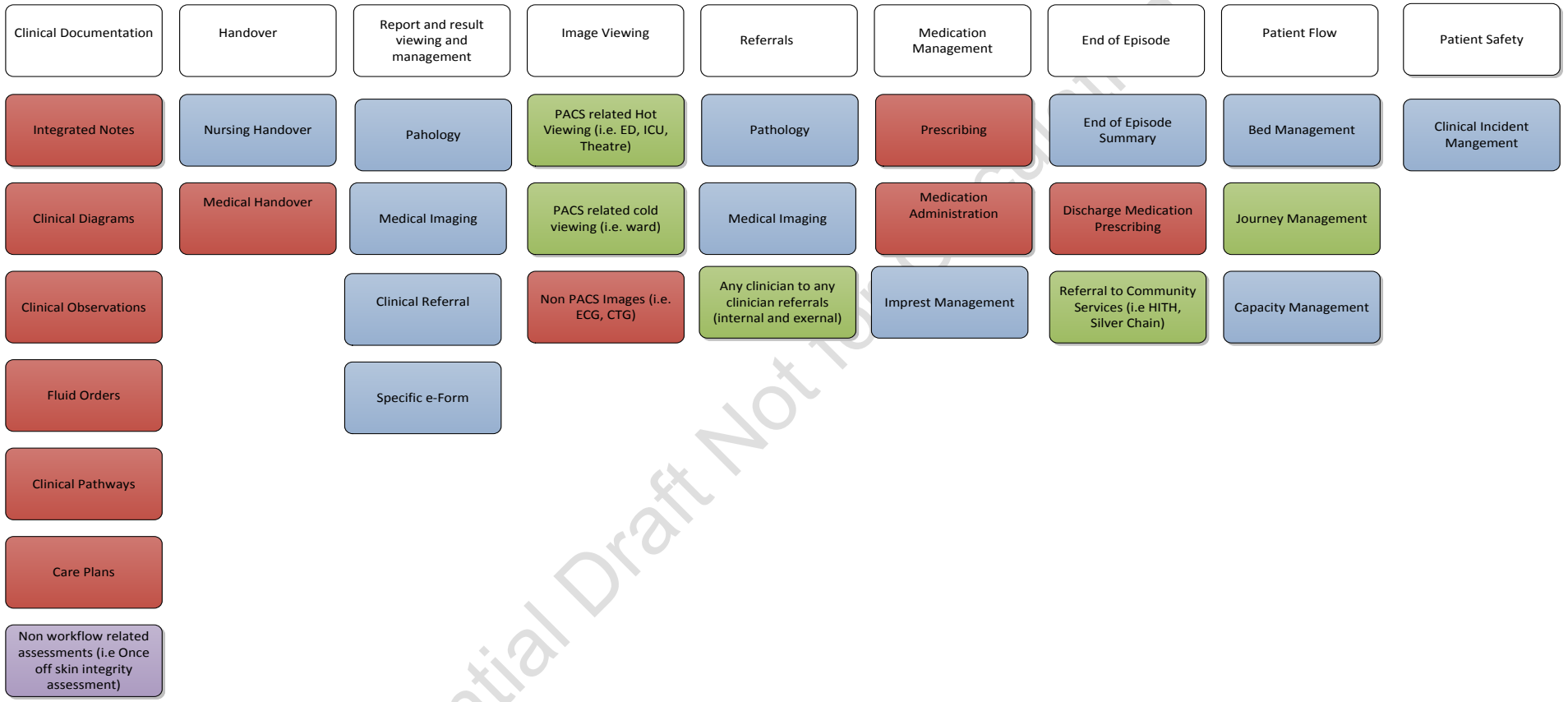
The purpose of this document is to support the FSH Clinical Commissioning team identify manual work around and physical infrastructure changes as a result of the modified ICT solution at FSH.

Further analysis is required to fully understand the full impact of the changes and the level of investment required.

Analysis will be provided for:

- General Inpatient Area
- Emergency Department
- Intensive Care Units
- Theatre
- Outpatients Area
- Community and Ambulatory Care

General Ward



KEY:

Major Changes from Digital Vision

Clinicians will have greater or equal to level of ICT functionality that they work with today.

There is a gap between the vision of the fully digital hospital and what can be achieved in time for the opening of FSH - technically, financially and operationally. Key differences for inpatient areas between the visionary hospital and FSH Hospital Day 1 include:

- Clinical Documentation will remain paper based transitioning to a paper lite environment over time.
- Electronic Medical Record (EMR) will be managed through an end of episode scanned paper record.
- Inter-hospital transfers from / to FSH will require both a scanned and printed physical medical record.
- Requests for Facilities Management services for Cleaning, Porters, Supplies and Food Services will not be electronic.
- Medical Equipment will not be integrated with an EMR.
- There will not be smart carts for individual patient medication storage.
- Medication Charting and discharge prescriptions will be paper based.
- Limited applications will be deployed through mobile technology.

Identified Impacts to date (non-exhaustive)

Physical Infrastructure	• Need for physical storage for relevant clinical notes and paper storage. • Desk space at unit level to enable clinicians to complete clinical notes and access relevant ICT Hardware. • Identification, development and storage of clinically relevant clinical forms at organisational level (soft and hard copy). • Need for more desktops computers in inpatients areas with associated in-situ hardware to

	support increased user requirements (i.e. nursing handover). • Individual patient medication storage in lockable bedside cabinets. • Pharmacy Imprest management will need to be considered within the new environment.
Workflow and business process	• Manual work around and changes to some business practices will need to be developed in the areas of medication management, bed management/ patient flow, and medical record management.
FM Integration	• Need to develop manual work around to request FM services. • Scanning on demand / End of episode scanning and associated workflows for managing the EMR and its clinical impact will need to be considered.
Workforce	• Reduced change management required as Legacy systems and processes will be implemented at FSH. • Similar level of ICT functionality means reduced education and training effort required. • Impact of clinicians working across multiple sites and how they access and update relevant patient information.