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of South Australia

Report

of the

Auditor-General

Supplementary Report

for the

year ended 30 June 2014

Tabled in the House of Assembly and ordered to be published, 30 June 2015

Second Session, Fifty-Third Parliament

Health ICT systems and the Camden Park distribution centre: June 2015

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26 June 2015

The Hon R P Wortley MLC
President
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Parliament House
ADELAIDE SA 5000

The Hon M J Atkinson MP
Speaker
House of Assembly
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Dear President and Speaker

Report of the Auditor-General: Supplementary Report for the year ended 30 June 2014: Health ICT systems and the Camden Park distribution centre: June 2015

Pursuant to the provisions of the *Public Finance and Audit Act 1987*, I present to each of you a copy of my Supplementary Report for the year ended 30 June 2014 'Health ICT systems and the Camden Park distribution centre: June 2015' (June 2015 Report).

Content of the Report

Part A of the Auditor-General's Annual Report for the year ended 30 June 2014, tabled in Parliament on 14 October 2014, referred to audit work on some information and communications technology development and implementation projects that would be subject to Supplementary reporting to Parliament.

The Report of the Auditor-General: Supplementary Report for the year ended 30 June 2014: Matters of specific audit comment: December 2014 highlighted observations arising from the review of four information and communications technology development projects (programs) and described various problems and difficulties experienced by these projects.

This June 2015 Report updates commentary and issues related to Health ICT systems and the Camden Park distribution centre, which were subject to comment in the December 2014 Report. It also includes an assessment of progress on the Enterprise System for Medical Imaging Program. The systems and matters addressed in this June 2015 Report are significant in their own right but also to the new Royal Adelaide Hospital which is scheduled for commercial acceptance in April 2016.

Acknowledgements

The audit team for this Report was Andrew Corrigan, Tyson Hancock and James Baker.

I also express my appreciation for the cooperation and assistance provided by Department for Health and Ageing staff during the course of the audit.

Yours sincerely

Andrew Richardson
Auditor-General

Table of contents

Health ICT systems and the Camden Park distribution centre: June 2015

Table of contents

Health ICT systems and the Camden Park distribution centre: June 2015

1 Executive summary

1.1 Introduction

Previous Audit Reports have provided commentary on information and communications technology (ICT) system projects (programs) and also the new Royal Adelaide Hospital (nRAH) project.

In particular, a December 2014 Supplementary Report highlighted observations arising from the review of four ICT development projects. The Report described various problems and difficulties experienced by these projects, resulting in delays to implementation schedules, increased costs and reduction of anticipated benefits.

Two of the systems included in the December 2014 Report were the Enterprise Patient Administration System (EPAS) and the Oracle Corporate System (OCS).[1] These Department for Health and Ageing (SA Health) enterprise systems are among a number of key ICT systems intended to support the operations of the nRAH, which is scheduled for commercial acceptance on 18 April 2016.[2]

The purpose of this June 2015 Supplementary Report is to provide a progress update on EPAS, OCS and the Camden Park distribution centre, with particular focus on the implementation status and potential risks to the nRAH. In addition, this Report includes an assessment of progress on the Enterprise System for Medical Imaging (ESMI) Program. ESMI, or an alternative legacy system, is also essential to the successful opening and operation of the hospital.

This Report does not revisit the reasons for past delays for these systems but focuses on highlighting risks to meeting revised functionality, implementation deadlines and budget targets and their relationship to the nRAH.

To allow for reporting at this time, the review has not substantiated all project status report representations. For example, an EPAS software upgrade (version 14.3) in May 2015 referred to in section 2.5.1 of this Report has not yet been subject to audit testing to confirm the success of the upgrade. Where important to readers, the source of the information in this Report is noted.

1.2 Challenges and issues confronting SA Health ICT projects

The ICT projects reviewed have experienced problems and delays. None of the systems will be implemented as was proposed in their original business cases and/or implementation schedules.

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1 The December 2014 Report included commentary in the OCS section on the Camden Park distribution centre.

2 Commercial acceptance is the contractual date the nRAH is to be delivered and accepted by the State.

Ideally, all key ICT systems for the nRAH should have transitioned from the existing Royal Adelaide Hospital (RAH) to the nRAH, with sufficient time for staff to be familiar with using these systems and the associated workflows. Although OCS was implemented at the existing RAH in December 2014 and ESMI is planned for implementation in August 2015 this will not occur for EPAS.

Issues also remain concerning the distribution centre, which requires planning for an interim supply chain solution for initial operations at the nRAH.

In response to past issues, including those raised by Audit, SA Health has changed governance arrangements and in the case of EPAS changed key personnel. It is evident that these changes have resulted in improved project management practices.

Despite some project improvements significant challenges and issues remain. This Report details audit findings associated with the systems and the distribution centre, our recommendations for these findings and SA Health's response to the identified matters (refer sections 2 to 4 of this Report).

A summary of key audit findings and challenges are:

- readiness of EPAS, ESMI and the current distribution centre to meet nRAH requirements
- nRAH staff familiarity with EPAS and associated workflows may be insufficient
- some EPAS functionality issues remain unresolved
- development of some key ESMI interface issues remains in progress
- current project budgets of EPAS and ESMI may be insufficient
- demands on limited EPAS resourcing and potential for project scope creep
- EPAS rollout approach and timeframe outside the nRAH remains unclear
- OCS operational control risks still remain.

1.3 Audit comment on challenges and issues

Audit's recent review indicates that numerous outstanding risks and implementation activities need to be addressed. EPAS and ESMI are complex projects involving technical, functional and system integration challenges, work flow revisions and significant co-dependencies between providers, ICT personnel and users. Delays experienced have exposed the programs to further scope creep pressure and the need to now manage multiple system implementations concurrently as the nRAH opening approaches.

SA Health has identified the risks and has mitigation strategies. However, success depends on SA Health satisfactorily completing the risk actions in sufficient time to ensure necessary functionality is available for the initial operation at the nRAH. There is much to do for these projects and the reduced remaining time to the nRAH's opening is inherently adding pressure to implementation schedules.

In addition, contingency systems or arrangements have been identified in the event that the preferred systems are not sufficiently progressed by the required timeframes. This is to help ensure patient safety is not compromised and to take into consideration the uncertain nature of some remaining risks.

Addressing the Report findings will require close monitoring and management for the anticipated system benefits to be achieved.

Where systems are implemented in a reduced capacity but sufficient to meet the minimum or safe requirements to support the nRAH, there will remain implementation activities to complete. To the extent works remain, there will continue to be risks for further delay, cost increases or reduced benefits.

2 Enterprise Patient Administration System Program

SA Health's ICT developments, such as the EPAS Program, are intended to be a key component in achieving the objectives of the nRAH and South Australia's recent Transforming Health initiative.[3]

2.1 Audit objective and approach

Since last year's December 2014 Supplementary Report commentary on EPAS, Audit has maintained an ongoing review of the Program. This has involved Audit relating with both EPAS and the nRAH Program representatives and reviewing:

- EPAS Program monthly summary reports, quarterly risk declarations, project risk registers and briefing notes
- minutes of SA Health's eHealth Steering Committee (eHSC), Risk Management and Audit Committee and EPAS Program Board
- other supporting documentation related to the Program.

The objective of this review was to obtain an understanding of the current implementation status, budget and expenditure to date, key risks and the system's impact and readiness for the nRAH.

During the course of this review the EPAS Program was in the process of implementing key system and functional changes through software update 14.3 (refer section 2.5.1). Audit was therefore not in a position to perform operational testing. This includes testing the remediation of system control and functionality issues or to examine the overall usability of the system by clinicians. It is Audit's intention to conduct operational control and usability testing at a sample SA Health site(s) in 2015-16.

[3] For more information regarding SA Health's 'Transforming Health' initiative refer to www.transforminghealth.sa.gov.au

2.2 Key audit findings

This review has noted the following key EPAS risks, which are explained further in section 2.8 of this Report:

- lack of staff familiarity with EPAS and associated workflows at the nRAH
- configuration functionality specific to the nRAH may not be completed in time
- demands on limited resourcing may impact implementation timeframes
- potential for further program scope creep may impact implementation timeframes and budget
- approved EPAS budget may require additional funding
- some EPAS functional issues remain unresolved
- some billing functional issues remain unresolved
- further patient administration system (PAS) functionality is required before the system can be deployed to a large complex site, such as the nRAH
- problems with periphery devices to access EPAS
- EPAS rollout approach and timeframe for additional sites outside the nRAH remains unclear.

2.3 EPAS Program background and drivers for development

In April 2007 Cabinet approved a submission for 'Health Reform'. This submission included the endorsement of an ICT investing program for the Department of Health (now Department for Health and Ageing) for $214 million over 10 years to replace ageing infrastructure and systems, with the aim of delivering a state-wide electronic health record.

To facilitate the transition from a facility-based paper clinical record keeping to an integrated electronic health record, in December 2011 Cabinet approved the business case for the implementation of the EPAS Program. This led to the Minister for Health and Ageing (responsible Minister) entering into contractual arrangements with Allscripts Healthcare Solutions Inc. (Allscripts) for the EPAS solution.

The original purpose of EPAS was to provide functionality for:

- patient administration for patient registration, scheduling, referral and waitlist management
- billing and billing management of clinical services
- clinical care, to allow timely electronic access to clinical information and supporting delivery of care.

It is expected that EPAS will integrate and/or interoperate with a number of other SA Health systems, including the Enterprise Master Patient Index system (EMPI), OCS and One Procurement Solution (OPS), theatre management systems, ESMI, pharmacy management system (iPharmacy) and Enterprise Pathology Laboratory Information System (EPLIS).

The nRAH and risks and costs associated with maintaining a number of unintegrated ageing legacy patient administration systems continue to be the primary reasons for SA Health's ongoing commitment to the EPAS Program.

2.4 Original EPAS implementation approach

The December 2011 Cabinet submission approved the selective rollout of EPAS to include all metropolitan hospitals, GP Plus centres, Glenside Hospital, SA Ambulance Service Inc metropolitan headquarters (Greenhill Road office) and two general country hospitals (Mount Gambier and Port Augusta).[4]

The original proposed implementation approach consisted of the following four phases, with a scheduled completion for mid-2014:

- Phase 1 – planning (2011)
- Phase 2 – design and build (2012)
- Phase 3 – implementation (2013-14)
- Phase 4 – operationalise (post-2014).

2.4.1 EPAS implementation sites

As noted in Audit's December 2014 Report, the EPAS solution has been activated at:

- Noarlunga Hospital and Noarlunga GP Plus Super Clinic (25 August 2013)
- Aldinga, Morphett Vale and Seaford GP Plus Health Care Centres (18 November 2013)
- SA Ambulance Services Inc metropolitan headquarters (20 November 2013)
- Daw House at the Repatriation General Hospital (1 December 2013)
- Port Augusta Hospital (15 December 2013)
- Repatriation General Hospital (4 April 2014).

Activation at individual sites had taken longer than expected and a number of critical functionality issues throughout the course of the implementation were identified.

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[4] The original scope of the EPAS rollout is smaller than the legacy Open Architecture Clinical Information system (OACIS) used by various SA Health sites. OACIS provided elements of a state-wide electronic health record in the previous environment. Hence when OACIS is decommissioned at the end of the EPAS rollout some non-EPAS sites will lose their existing health records. Reference: 'Target State Environment - Health Architecture', version 0.2 (dated 5 June 2014), pages 12-13.

As a result, SA Health reconsidered its position on the EPAS Program. Four options were subsequently submitted for consideration by the Health Reform Cabinet Committee (HRCC) in June and August 2014. Of these, the option to stabilise and relaunch the EPAS solution was approved by Cabinet in late October 2014. This involved pausing the rollout of EPAS and commencing an additional stabilisation phase (Phase 5).

2.4.2 EPAS stabilisation phase

The scope of the stabilisation phase included the following six work streams:

- *Product and system stability* – product update to eliminate all critical product defects identified to date with particular emphasis on the PAS and on the billing modules
- *A fit for purpose solution* – planned functional build to eliminate all critical and high configuration issues and to build functional requirements required for future sites
- *Standardised workflows and organisational change* – standardise workflows into processes and scoping the extent of organisational change that would apply to remaining sites
- *Updated training approach* – develop revised training strategy for future sites and review the approach to training, development and access to materials and delivery mechanisms
- *Business as usual* – continue to provide the support necessary for staff at activated sites
- *Planning for post-December 2014* – once the EPAS product is stabilised, commence planning the next priority; implementing EPAS at the existing RAH.

Audit noted that this phase incorporated a number of activities not completed as part of prior program stages, notably the design and build and operationalise phases.

Due to the complexity of EPAS and its various modules, the sequential 'waterfall'[5] approach adopted by the EPAS Program was not deemed to be a workable solution for future site implementation. The original program approach was subsequently altered. As a consequence the EPAS Program changed its strategy to one of incrementally building functionality as needed for deployment at a particular site. The activities undertaken during the stabilisation phase included:

- significant rework of the EPAS solution to ensure system issues are addressed in the minimum standards required of the system at current and future sites, particularly the patient administration and billing modules
- work to address planned functional requirements to ensure sustainability in future sites, including a large hospital

[5] Waterfall approach is a linear sequential software design process whereby each stage is completed before moving to the next stage.

- revisit and address standardised workflows and organisational change as a result of changes to the system functional build
- improvements to the training approach and activities based on experience from activating EPAS at current live sites
- realignment of the EPAS Executive teams and Program Delivery teams to help improve efficiency and effectiveness of the overall delivery of the EPAS Program.

In addition, SA Health advised that contingency planning would commence on options for the nRAH in the event that EPAS was not ready to deliver its requirements.

At the time of Audit's December 2014 Report, the stabilisation phase was anticipated to be completed in February 2015 after delays to the initial December 2014 target.

On completion of the stabilisation phase, the implementation strategy was to be presented to Cabinet for approval in early 2015, with the amended EPAS strategy to continue implementations on a staged basis.

2.5 EPAS implementation status update to June 2015

2.5.1 Stabilisation phase status

Since last year's Report, many improvements have been made to the EPAS Program. These have included a more structured approach to addressing product and system functionality issues; program management has focused on tracking and delivering outcomes against approved metrics and formal governance arrangements have applied to the commencement of future project stages, including budget approvals.

Certain stabilisation activities were completed at the end of February 2015. This included Allscripts identifying and designing system fixes to resolve some critical and high risk issues. Audit was advised that these fixes had addressed some PAS and billing issues, product defects and other issues raised at EPAS activated hospital sites, including clinical module issues.

During this period, the EPAS Program was also engaged in resource planning for the nRAH site activation and further planning for integrating and assessing dependencies with other major eHealth programs, such as EPLIS and ESMI.

Despite this progress, the completion of some stabilisation activities was delayed beyond February 2015. In particular, the software update (version 14.3) was not deployed into the existing EPAS production environment until the end of May 2015. Audit was advised that this was primarily due to the extra time required by Allscripts to address some functionality issues and the requirement for some resources to plan for EPAS implementation at the nRAH.

As noted above, SA Health had anticipated presenting a Cabinet submission in early 2015 to provide an update on the stabilisation phase and the next stage of the EPAS Program. At the time of writing this Report the Cabinet submission was due to be finalised in the coming weeks.

2.5.2 Current activity

Although the stabilisation phase was focused on resolving certain system and platform configuration issues, the EPAS solution has considerable site specific configuration requirements, notably beds, services, staff, devices and patient workflows. These require significant configuration effort prior to site implementation, especially for an implementation into a large hospital.

The EPAS Program is working with the Central Adelaide Local Health Network Incorporated (CALHN) to identify and refine the operational model and training requirements for the nRAH. This work includes mapping EPAS functional areas with business processes to define functionality that can be safely adopted by the hospital for initial operation at the nRAH. Remaining functionality available in the system is planned to be adopted by the nRAH business units in a phased approach. This would include additional functionality of clinical, PAS and billing patient flow required for a large site, but not critical to the initial nRAH operations.

SA Health expects that this delineation will be completed in July 2015. Audit was advised that this approach is being taken to minimise the business change required for commissioning of the nRAH and to minimise risk.

Audit understands that the EPAS Program is working with Allscripts to implement an EPAS build at the nRAH that will include:

- all functionality, including medication management, currently configured and operational at activated sites
- resolution for product functionality issues currently requiring workarounds at activated sites, that would not be sufficient at the nRAH or at other large sites
- development of certain additional requirements specific to the nRAH, including renal functionality.

As part of the build process, SA Health is also working with SA Health Partnership Nominees Pty Ltd (Project Co) to develop the end-to-end information workflow between information systems, including data from EPAS. This process will also define if any interim mitigation strategies are required to provide the necessary data flows for the hospital's business as usual operations (for example, data required to track patient movements within the nRAH). The target completion date is mid-January 2016.

2.6 Summary of the EPAS Program budget and a status update

A Cabinet submission in November 2010 advised the selection of Allscripts as the preferred EPAS software solution provider and provided an early estimated total cost for EPAS over 10 years at $220 million (capital cost of $151 million and operating cost of $69 million). The estimate was stated to be subject to refinement during the planning phase.

The December 2011 approved Cabinet submission that endorsed the go-ahead for the EPAS Program estimated that the total cost of the Program over a 10 year period was $408 million (capital cost $143 million; operating cost $220 million; risk based contingency $45 million).[6]

[6] The Commonwealth Government contributed $90 million to the program costs under the National Partnership Agreement on Improving Public Hospital Services.

The business case for EPAS was based on sufficient savings benefits being realised as costs were incurred, to enable the EPAS Program to become self-funding. SA Health indicated in the submission that the approved EPAS rollout would result in an overall favourable position of $11 million over 10 years to 2020-21.

In the 2011-12 Mid-Year Budget Review the total EPAS Program funding was revised to $422 million, with the risk based contingency funding increased to $49 million to cover inflation.

As previously reported, since the December 2011 Cabinet approval, there has been a deterioration of expected benefits and the EPAS budget position given the delays to the EPAS rollout.

In last year's Report, Audit noted that a submission update to Cabinet was proposed for early 2015 to give an informed position on the effectiveness of the stabilisation strategy and information on EPAS Program costs/benefits. As previously mentioned, a Cabinet submission is now expected to be finalised in the coming weeks.

In the interim, Audit notes that a May 2015 program update to SA Health's Risk Management and Audit Committee indicated that while the program as at the end of March 2015 shows a net under-spend of $22.2 million on a cash flow basis, it masks over-expenditure on a milestone basis. The update stated that $16.1 million was over-expenditure in design and build and $14.5 million was over-expenditure for the estimated cost to activate Noarlunga Hospital, Daw House and the Repatriation General Hospital.

In terms of expected benefits, the May 2015 program update indicated a write-down on the level of benefits to be realised over 10 years by $75.8 million. This is primarily attributed to program delays ($42.8 million), estimated reduction in benefits arising from impacts of scope (eg ORMIS and iPharmacy will not be replaced) and parameter changes (savings from medical record staff were previously overstated) totalling $33 million.

A summary of the EPAS Program budget as of March 2015 is outlined in the following table:[7]

	Original approved budget (December 2011) $'000	Approved adjustment (2011-12 Mid-Year Budget Review $'000	Expenditure to date $'000	Remaining budget $'000
Original approved budget (capital and operating expenditure)	363 100	372 292	160 350	211 942
Contingency	44 800	49 162	1 933	47 229
Total budget	**407 900**	**421 454**	**162 283**	**259 171**

2.7 EPAS contractual dispute with Allscripts vendor

Audit previously reported that SA Health had initiated a claim against Allscripts.

In December 2012, SA Health received notification from Allscripts that there would be a delay in the delivery of some critical elements of the EPAS billing module. As a result, Audit

[7] The expenditure to date figure was taken from a May 2015 internal program update to the Risk Management and Audit Committee, and has not been audited.

understands that SA Health asserted that it incurred additional costs as a result of this delay. Subsequently, SA Health lodged a formal claim for delay costs with Allscripts.

In November 2014, SA Health reached agreement with Allscripts on the terms of a settlement agreement for the delay cost claim of approximately $13.25 million. This settlement position was endorsed by Cabinet in December 2014, with the terms of the settlement commercial in confidence.

Audit notes that the Allscripts settlement will have a positive financial impact on the program budget from the 2015 calendar year onwards.

2.8 Key program risks and audit concerns

The EPAS Program has experienced significant challenges and problems, which can be partially attributed to a lack of rigorous program management discipline prior to the appointment of the current Program Director. These include unplanned changes in scope and system functionality, original underestimation of time and effort to implement EPAS at sites, lack of integrated program planning, short timeframes for deliverables, underestimation of the extent of change in work practices in health settings and the extent of system functionality and stability issues.

Audit notes that the current Program Director, appointed in March 2014, and the revised program leadership team, have made significant improvements to address these problems.

To help address some known issues/challenges since Audit's December 2014 Report, the EPAS Program has:

- provided Allscripts with a separate test environment to allow its system testing of release 14.3 prior to final delivery to SA Health
- implemented release 14.3 into production in May 2015
- conducted a root cause analysis to improve the efficiency and effectiveness of future rollout processes
- created a separate environment to build and test functionality for the nRAH
- arranged more formal, ongoing scheduled meetings with Allscripts to discuss issues and report on progress of key deliverables as part of the EPAS product, which includes resources available to the EPAS Program
- strengthened program governance to include representation and involvement of key stakeholders with a vested interest in the EPAS solution, including local health networks on the EPAS Program Board.

These improvements have resulted in greater transparency and should reduce the potential for high risk defects or functionality issues being implemented into production for future EPAS version releases.

Despite these improvements, the EPAS Program risk register highlights a number of active 'high' category risk items that remain after internal risk treatments have been applied. These risks will require ongoing monitoring and further treatment to ensure their effective mitigation.

For example, an extract of the EPAS Program risk register presented at the May 2015 Risk Management and Audit Committee, included risks relating to lack of a comprehensive 'fit for purpose' device strategy; resourcing issues and competing resourcing demands; and the potential for legacy systems to be shut down before the EPAS solution is fully activated at the health sites.

Audit has noted that a number of the due dates of these risk treatments have been extended throughout the course of the EPAS Program, which are attributed to overall program delays.

Audit considers that the risk treatments need ongoing attention to reduce program risks to an acceptable level and reduce their potential impact on future implementations. If these issues are not addressed, the risks become heightened as the program progresses.

In examining the EPAS Program, especially in its ability to meet nRAH requirements, Audit has the following concerns.

2.8.1 Lack of staff familiarity with EPAS and associated workflows at the nRAH

The original EPAS Program schedule stated that EPAS was to be rolled out to the existing RAH in mid-2014.

At the time of Audit's December 2014 Report, it was noted that a joint decision was to be made by the EPAS Program and CALHN in early 2015 on what EPAS functionality will be available and ready to be implemented at the nRAH. This decision included the assessment of the EPAS solution deployment options relating to the nRAH and the assessment of a preferred contingency approach, which would potentially require modified processes and manual workarounds.

The subsequent assessment resulted in the EPAS Program Board and New RAH Steering Committee jointly agreeing in March 2015 on the decision not to implement the EPAS solution into the existing RAH. This was mainly due to the tight implementation timeframes and the associated modifications to workflow practices that would need to be adopted by clinical staff when using the new system.

SA Health decided that a direct approach to the nRAH was the preferred option. This decision involved a number of considerations, including the business change risk, enabling the new model of care, risk to the nRAH timeline for opening, patient safety and EPAS implementation timeframes.

At the time of writing this Report, the joint decision by the EPAS Program Board and New RAH Steering Committee to stop implementation of the EPAS solution into the existing RAH had not been formally approved by Cabinet.

Risk

Audit does not dispute the EPAS Program Board's decision regarding this change in implementation approach due to the tight timeframes remaining for the nRAH implementation. The risk of staff not being suitably competent in using the product and the new workflow practices that would need to be adopted, is an issue for all new sites that adopt EPAS. There will be additional pressure on staff at the nRAH, however, due to commencing work in a new physical environment and other associated changes on work practices that are independent of EPAS.

A September 2014 Cabinet submission, for example, noted that in order to mitigate the substantial risks of a new system in a new facility, the clinical system solution to be used needed to be deployed to the existing RAH at least nine to 12 months prior to initial operation at the nRAH. This was to provide sufficient time for employees and clinicians to be proficient in using the solution and the new and associated new and/or changed workflows.

There remain considerable risks around the lack of readiness, capacity and capability to manage the level of required business change. This is compounded when the system is being implemented at South Australia's new major hospital site, the nRAH. Audit notes that considerable work is being undertaken by the EPAS Program, CALHN and the nRAH Program to address business change risk.

Audit also notes that the EPAS Program has sought to reduce the degree of change in the initial operation at the nRAH by deploying EPAS functionality in a phased approach. For more information regarding the phased approach refer section 2.5.2.

Recommendations

A number of strategies are being applied by SA Health to mitigate the risk of using a new system and process workflows within a new hospital. Audit recommends these strategies continue to be diligently pursued. These include:

- initially limiting system functionality, to reduce the extent of learning and familiarity time required to use the system
- maintaining an increased focus on EPAS training and a detailed communication strategy for existing RAH staff to increase familiarity of using EPAS and the required workflows. In particular, allowing for timely activation and tailoring training on EPAS functionality and any temporary workarounds in place when the nRAH commences operations
- ensuring the provision of sufficient onsite EPAS 'champions' and technical support staff who are competent communicators
- actively reviewing and measuring the mitigation strategies of the risk treatments to enable these risks to be reduced to an acceptable level.

SA Health response

To address the first and last points, SA Health advised:

- the EPAS Program, the nRAH and CALHN are working together to define the requisite minimum EPAS functionality for initial operation at the nRAH. This is to ensure patient safety is not compromised and contractual requirements with Project Co are met
- the safe delivery of hospital services is the overriding consideration in determining the initial system functionality. CALHN and the EPAS Program are working together to ensure all solutions conform to the principles of simplicity, safety and transparency
- with input from the EPAS Program, CALHN is working through what the hybrid medical record will look like on initial operation at the nRAH. This work is expected to be completed by the end of June 2015

- the EPAS Program is preparing a risk mitigation strategy for the nRAH, due for completion by the end of July 2015
- risks are actively reviewed in a number of governance forums, such as the EPAS Program Board, the nRAH ICT Committee and eHSC. SA Health continues to review mitigation strategies to ensure risks are appropriately mitigated.

To address the second and third points, SA Health advised:

- SA Health maintains a number of directorates that are specialist clinical divisions such as medical, surgical, allied health and critical care. Directorate meetings are being undertaken to address their requirements, timeframes and priorities
- training approaches will be developed for each specialist clinical division once the functional scope is approved for each directorate
- the EPAS Program will ensure that sufficient support resources are in place for the nRAH activation. This will be achieved through proactive recruitment and regular management of workflows
- lessons learned from post activation support previously provided at live sites have led to a review of the support required for the nRAH. The EPAS Program is planning to provide four to six months post-implementation support with check points to determine the site readiness for transition to business as usual.

2.8.2 Configuration functionality specific to the nRAH may not be completed in time

Audit previously reported that the design of the nRAH, including physical layout, information flow and equipment selection, remains significantly reliant on implementation of EPAS, which includes a clinical system solution.

Despite remediation of certain functional issues during the stabilisation phase, ongoing delays in the EPAS Program still present a heightened risk that the required minimum EPAS functionality will not be fully ready for rollout to the nRAH.

Timeframes remain a key risk for the EPAS Program to meet milestone commitments in the contract agreement with Project Co, such as technical completion and commercial acceptance deadlines for opening of the nRAH. All ICT systems must have testing completed prior to 17 January 2016, ready for State Operational Commissioning (SOC) involving testing of all new hospital operations ready for commercial acceptance.

The February 2015 eHSC minutes indicated that the EPAS Program only learnt of the 17 January 2016 requirement in the third week of February 2015. The EPAS Program was previously working to a deadline of mid-April 2016. The meeting minutes also state that SA Health was working with Project Co on this requirement as all planning and documentation must be provided 10 months prior to the work commencing (due 17 March 2015).

Audit notes that the nRAH functional build is being separately configured for testing, with the first iteration implemented in May 2015. However, in March 2015, the EPAS Program was still focused on mobilisation and addressing specifically the nRAH's model of care and the system architectural requirements. This suggests there is a potential risk in the timely completion of all required system and integration testing.

In addition, the nRAH has a requirement for a reduced hardcopy paper workflow and storage. The nRAH was not in the original scope of the EPAS business case and as such the nRAH's reduced hardcopy paper requirements were not clearly articulated in the original EPAS business case.

Recent feedback provided to Audit has indicated that a Hybrid Record Team is investigating the option of implementing a hybrid medical record on initial operation at the nRAH. This approach is a combination of paper based as well as electronic records of information. A concern remains around the implementation of a hybrid record due to its associated impact on workflows.

A successful implementation of the EPAS solution into the nRAH is also reliant on a number of dependencies to facilitate efficiencies by reducing the requirement for paper work and manual handling, notably:

- implementation of and interface with EPLIS for information flow of patient pathology
- transition of ESMI and interface for online/electronic ordering of imaging services
- implementation and interface with iPharmacy for information flow of medication management including drug ordering
- transition of Oracle and interface for recording patient billing for financial management purposes.

The contingency approach adopted, should EPAS not be ready for implementation at the nRAH, involves a number of alternate legacy systems. In particular, Acute Patient Management System (APMS) for PAS and Open Architecture Clinical Information Systems (OACIS) for renal and pathology functionality.

As part of this process these legacy systems may require certain functional upgrades and/or workarounds to achieve required business process flows. Audit understands that work is being conducted on the nRAH contingency plan in parallel with work on building the EPAS solution with functionality fit for the nRAH.

Risks

If certain information system functionality requirements are not met by EPAS, or an alternative contingency solution, there is a risk that the nRAH contractual requirements with Project Co will not be met.

There is also the risk that SA Health will need to factor in alternate paper storage options and daily transport arrangements.

Given the tight implementation deadlines for the nRAH there is a risk that insufficient time will be available for adequate EPAS testing.

The tight deadlines also heighten the risk that the alternative legacy systems may not be suitably upgraded to provide all required functionality.

Recommendations

The EPAS and nRAH Programs are working to articulate the minimum EPAS functionality required on initial operation at the nRAH to ensure patient safety is not compromised and contractual requirements with Project Co are met. This minimum functionality must be agreed as a matter of priority.

The EPAS Program, Allscripts, CALHN and the nRAH Program should continue to work together and provide sufficient resources to meet the current required timeframes. This includes allowing adequate time for system testing and the development of alternative legacy systems.

SA Health response

As mentioned in the response to 2.8.1 above, CALHN, the nRAH ICT team and the EPAS Program are working together to define the requisite minimum EPAS functionality at the nRAH opening to ensure patient safety is not compromised and contractual requirements with Project Co are met.

A supplementary contract for professional services is in place with Allscripts which provides access to additional specialist resources to meet the current required timeframes. CALHN's executive leadership team is actively engaged to ensure sufficient resources are applied to meet the required timeframes. CALHN executive leaders are also on all three governance oversight committees of eHSC, the nRAH ICT Committee and the EPAS Program Board.

Management of scope is conducted by the EPAS Program Leadership and Planning Group and controlled directly by the EPAS Program Board.

The EPAS Program will continue to monitor and track resource requirements weekly as part of the EPAS Program Leadership and Planning Group meetings and to ensure appropriate engagement with the nRAH, CALHN and Allscripts.

2.8.3 Demands on limited resourcing may impact implementation timeframes

Approximately 200 resources, excluding the nRAH ICT Program resources, are currently working on the EPAS Program.

The EPAS Program is, however, experiencing issues in supporting business as usual at existing 'live' EPAS sites. This support is required in parallel with finalising the stabilisation phase and pre-activation activities for the next EPAS rollout sites in 2015-16.

SA Health is under pressure to balance the resource needs of several concurrent capital programs. The EPAS Program noted that a planned independent review on the overall future deployment approach for EPAS will draw on the program's resources.

In response, SA Health has recently undertaken extensive work on resource planning to ensure that appropriate resources will be available for the EPAS Program. Given the resource difficulties experienced by the EPAS Program, Audit considers resource challenges still confront the Program.

Resources challenges are primarily a legacy of the original program plan outlined in the December 2011 business case. The original program plan underestimated the effort required and did not identify and activate appropriate resource planning activities, including contingency in a timely manner, to enable effective planning for concurrent program stages.

Risk

Insufficient resourcing may impact the ability of the EPAS Program to meet all program requirements in a timely manner, while also maintaining business as usual support and assisting other enterprise system programs.

Competing resource demands may not be adequately planned, prioritised and managed.

Recommendation

The EPAS Program should continue to monitor the adequacy and assignment of resources, with a proactive recruitment strategy.

Concurrent program stages need to be pre-planned in a timely manner to ensure sufficient resources are made available.

SA Health response

The EPAS Program is conducting planning work meetings with the nRAH and CALHN to ensure there is alignment and is developing a joint plan of all work requirements.

The Program will continue with its proactive recruitment strategy and monitor and track resource requirements weekly as part of the EPAS Program Leadership and Planning Group meetings.

A detailed plan for concurrent rollout activities at the nRAH is being matured through an iterative process as part of current program activities. Planning for concurrent program activities for future EPAS sites to be deployed post-nRAH will commence after the nRAH plan is finalised.

2.8.4 Potential for further program scope creep may impact implementation timeframes and budget

SA Health has not redeveloped the initial business case following repeated program delays and increased costs relative to progress.

SA Health conducted an assessment to reset the objectives, scope and approach of the EPAS Program. This was first presented to the eHSC in October 2014. Certain committee representatives noted that the approved scope in the original Program business case was large and open-ended and analysis has identified that the scope and scale far exceeds the capacity to execute delivery.

Audit was advised that the purpose of the October 2014 eHSC paper, was to gain acceptance that the full functionality available within EPAS was too great to be implemented all at once in a large and complex site. As a consequence, it was decided that options would be examined for implementing EPAS at large sites in a phased manner. Each phase is expected to be tightly defined.

The EPAS Program is now going to be implemented through a phased approach (refer section 2.5.2). Audit notes that currently, SA Health is yet to completely define the best subset of system functionality on initial operation at the nRAH.

Audit considers it of significant importance following the revised program strategy, that scope and functionality is appropriately contained through increased control at a program governance level. Audit notes that the majority of scope changes related to clinical functionality, with minimal PAS related changes.

Risk

Having an unclear understanding of the EPAS finished product and ineffective management of scope creep, can divert resourcing effort in achieving the minimum required system functionality within the tight nRAH implementation timeframe.

Continual increases in program scope, in particular clinical scope changes, has been a driver for increased delays and costs.

Recommendations

SA Health should finalise defining the subset of system functionality to be implemented on initial operation at the nRAH.

The EPAS Program Board should continue to effectively manage scope creep through governance controls.

The business communication strategy and training approach needs to be well established to effectively manage local health network (LHN) stakeholder expectations. This includes a clear understanding of the roles and responsibilities expected of LHNs and the EPAS Program.

SA Health response

In response to section 2.8.1 it was noted that work is being conducted to define the requisite minimum EPAS functionality at the nRAH.

Management of scope will continue to be conducted by the EPAS Program Leadership and Planning Group and controlled by the EPAS Program Board.

Strict scope control mechanisms were put in place by the EPAS Program Board at its meeting of March 2015. There is a default to decline any new scope request unless it relates to fixing a known patient safety issue and this is highly scrutinised by a clinical reference group.

The Program continues to engage with LHN stakeholders. The Program is working together with CALHN and the nRAH ICT team to prepare a RACI matrix[8] which will ensure roles and responsibilities are clear and understood by all parties.

A Communication Strategy will be completed post consultation with CALHN and approval will be sought by the EPAS Program Board in July 2015.

2.8.5 Approved EPAS budget may require additional funding

As previously mentioned, a May 2015 program update to the Risk Management and Audit Committee indicated that while the program spend as at the end of March 2015 shows a net under-spend of $22.2 million, it masks over-expenditure by milestone.

In particular, at May 2015 there was a $16.1 million over expenditure in design and build and $14.5 million over-expenditure for the estimated cost to activate Noarlunga Hospital, Daw House and the Repatriation General Hospital.

Audit also has noted other functional issues that may require additional expenditure to deliver the required solution. This includes developing the solutions to address deficiencies with current periphery devices used to access the EPAS application (refer section 2.8.9).

[8] RACI stands for Responsible, Accountable, Consulted and Informed. RACI is a responsibility assignment matrix which describes the participation by various roles in completing tasks or deliverables for a project or business process.

Since the stabilisation phase, the overall program budget was transferred from SA Health to the Department of Treasury and Finance. SA Health is now required to seek Cabinet approval for access to the budget of each phase. Audit anticipates that this revised budget management approach should improve transparency and control over the EPAS budget.

Risk

Although the program has a contingency budget allocation of $49 million, the over-expenditure per milestone of program phases and ongoing functional challenges indicates that the remaining budget may not be sufficient to undertake all in scope activities.

Recommendation

The program governance committees should continue to regularly monitor and report on any budget implications relating to functional issues raised, implementation delays and challenges confronting the EPAS Program. This includes assessing whether the current programing reporting could be improved and supports early identification of future potential budget overruns.

SA Health should restrict scope creep to minimise the likelihood of additional funding requests.

SA Health response

The program governance committees monitor the budget performance of the EPAS Program at each meeting and will continue its oversight of issues affecting budget performance.

The EPAS Program will re-assess whether financial reporting needs can be further improved and provide recommendations to the EPAS Program Board by the end of July 2015.

In response to section 2.8.4, strict scope control mechanisms were put in place to decline any new scope request, unless it relates to fixing a known patient safety issue and this is highly scrutinised by a clinical reference group.

Detailed scope for rollout into the nRAH will be agreed with CALHN. Any changes to scope will undergo a review by the EPAS Program. A detailed documented approach is currently being developed. Once final agreement is reached on the scope, approval will be sought by the EPAS Program Board.

2.8.6 Some EPAS functional issues remain unresolved

During the stabilisation phase a number of critical and high risk issues were able to be resolved by the EPAS Program, however, user acceptance testing also identified further issues for resolution.

As of March 2015, Audit noted that since commencement of the EPAS testing 5362 issues have been raised. This was a slight increase from 5209 issues recorded in February 2015. The increase was largely due to testing the software upgrade (release 14.3) and production related issues. In March 2015 there were 373 active issues, one was critical, 168 high and 204 medium and low. A critical issue is defined by the EPAS Program as needing to be addressed before the product can be deployed into a large site such as the nRAH.

As mentioned in Audit's December 2014 Report, SA Health anticipated releasing the additional software upgrade (release 14.3) in mid-December 2014 at the latest, to resolve some billing, PAS and clinical functionality issues at operational sites. Release 14.3 was, however, delayed until late May 2015, due to issues requiring fixes to be implemented by Allscripts in January-February 2015.

To assist with release 14.3 and future software upgrades, a separate South Australian health test environment has since been established for Allscripts and the EPAS Program to test EPAS developments and workflows, including technical integration between EPAS and dependencies. Previously, Allscript's testing was performed in their corporate development environment. The ability for Allscripts to now test a new release in a test environment that mirrors the EPAS production system, should improve the efficacy of testing.

As at May 2015, Audit was advised that release 14.3 had addressed a number of PAS and billing issues. Despite this remediation a number of issues remain outstanding. These include issues relating to EPAS registration screens and functions, patient screens, outpatient waitlist and outpatient scheduling functions.

Risk

Until critical and high risk issues are resolved, the functionality and usability of the system is compromised.

Recommendation

The EPAS Program and Allscripts should continue to ensure sufficient resourcing effort is applied to resolve system issues, with resolution prioritised based on nRAH requirements.

SA Health response

The EPAS Program will continue to hold weekly management meetings with Allscripts where resource requirements are tracked in detail for resolving system issues.

A significant reduction in functional issues was achieved with the implementation of version 14.3 into production in late May 2015.

2.8.7 Some billing functional issues remain unresolved

A number of issues, particularly involved with the patient billing module were identified following the software upgrade (release 14.2) applied in October 2014 and during testing of software release 14.3.

Notable issues with the patient billing module included: room charges for inpatients, re-evaluate charges with transfer, batch payments, receipt printing, self-pay line level allocation, security for payment/adjustment entry and other general billing functions.

Although a number of issues were rectified during the stabilisation phase, Audit was advised that due to certain system deficiencies EPAS sites are still required to perform some manual transactional level reconciliations. This manual process is to validate and/or correct billing data transferred from EPAS to OCS.

Notable outstanding billing functionality issues include:

- cash receipting and claim worksheet functionality is expected to be delivered by Allscripts in December 2015
- requirements specification for long stay nursing home types is underway with SA Health Hospital Revenue Services
- Allscripts engagement of a third party to provide a billing interface solution to Medicare.

Work continues with Allscripts to increase system functionality to facilitate reconciliation of Medicare billing rejections and improved management of long stay patients. In April 2015, specifications for desired system functionality were submitted to Allscripts for preliminary responses.

Risks

While billing functionality issues remain, there is an increased risk of:

- potential loss of revenue
- additional staff effort to perform manual billing reconciliations between systems.

The significance of manual workarounds required for the above billing risks will be site specific.

Recommendation

The EPAS Program and Allscripts should continue to ensure sufficient resourcing effort is applied to resolving billing system issues, with resolution prioritised based on nRAH requirements.

SA Health response

A significant reduction in functional issues was achieved with the implementation of version 14.3 into production in late May 2015. Version 14.3 fixed the majority of functional billing issues.

The EPAS Program will continue to work with Allscripts to ensure resource requirements are tracked in detail to resolve any remaining billing system issues. SA Health has put priority resources into resolving billing issues and will continue to do so.

2.8.8 Further PAS functionality is required before the system can be deployed to a large complex site such as the nRAH

Audit was advised that EPAS has brought some PAS improvements to activated sites, notably through a single patient clinical record and improved prescription techniques, including accuracy of dose, frequency and timing. EPAS has also improved system alerting of drug dosage, drug interactions and allergies and the provision of real-time clinical information.

Despite these benefits, Audit has previously commented on concerns raised by staff at activated EPAS sites, including the outcomes of a post go-live assessment. This assessment indicated that the PAS functionality was not sufficient to meet SA Health's requirements.

In February 2014, SA Health identified a number of PAS functions that required improvement to increase PAS efficiency at the next large site. It was intended that significant

improvements would be delivered via two major software releases, being releases 14.2 and 14.3. Following testing of the October 2014 software upgrade (release 14.2), additional items were identified in a review by PAS working groups.

SA Heath has identified that certain mitigation strategies for PAS issues will remain outstanding during 2015. Audit notes that the majority of these require enhancements to be implemented that target workflows and/or additional training requirements.

Risk

Any unresolved functionality problems have the potential to impact workflow design and cause additional resource intensive manual workarounds. Until resolution, there may be a reduction in expected program benefits and increased operating costs.

Recommendation

The EPAS Program and Allscripts should continue to ensure sufficient resourcing effort is applied to resolving PAS system defects, with resolution prioritised based on nRAH requirements.

This will require the EPAS Program and Allscripts to appropriately plan the allocation priorities, resources and monitoring to meet expected outcomes.

SA Health response

With the recent release 14.3, the majority of the PAS defects have been addressed and the program will continue to actively monitor the remaining PAS issues.

Remaining PAS functionality required for the nRAH has always been scheduled to be configured as part of the nRAH deployment activities. The EPAS Program will continue to work with Allscripts and track resource requirements in detail for resolving PAS issues.

2.8.9 Problems with periphery devices to access EPAS

An aim of EPAS and nRAH clinical workflows was to provide patient services at the bedside. These services include meals ordering and the provision of health related patient information, such as rehabilitation advice.

One mechanism to provide this service across SA Health sites was via bedside computers. At the time of writing this Report, these devices were experiencing usability issues and have limited development support.

In addition to the bedside computers, a Sunrise Mobile MD II (MD II) application is currently available to SA Health staff at active EPAS sites. This application is designed for medical staff workflows, including the ability to review current active orders, place, discontinue and cancel orders, note some documentation, view and send new secure health messages and view and trend results.

Audit also notes that the EPAS Program Board approved a pilot in January 2015 for another mobile device application to access EPAS, called the Sunrise Mobile Care (SMC). This application is designed to deliver certain focused functionality to nurses and clinicians. The SMC application aims to provide the ability to add and delete assigned patient lists, review and administer medications and record general progress notes.

Following the stabilisation phase, the SMC application was originally expected to be rolled out at a current 'live' EPAS site to run over a three month period. This pilot has since been delayed to the third quarter of 2015.

Both MD II and SMC applications also provide general functionality including, the ability to view patient lists, patient information and visit history, access to patient flagged orders, results and alerts, view selected observations including allergies and review patient problem list information to mobile devices of nurses, medical staff and other clinicians.

While Audit considers SA Health actions as positive to resolve the bedside computer usability issues, delays in the SMC pilot and contract novation negotiations have now placed additional pressure on completing the EPAS device strategy. In terms of the nRAH, this strategy will need to be completed in a timely manner to allow sufficient time for applicable cabling arrangements to be communicated to Project Co.

Risks

Although SA Health staff can access EPAS through workstations, it remains unclear how all required users will access the EPAS solution throughout all SA Health sites.

There may be insufficient time for solution deployment of the new device strategy for the initial operation at the nRAH.

Recommendation

SA Health should finalise the mobile device strategy in a timely manner.

SA Health response

The EPAS Program is working with eHealth systems and the nRAH to develop an appropriate mobile device strategy by the end of August 2015.

2.8.10 EPAS rollout approach and timeframe for additional sites outside the nRAH remains unclear

As stated in section 2.5.2, the EPAS Program is working with the CALHN to identify and refine the operational model and training requirements for the nRAH. This includes implementing functionality to the nRAH in a phased or staged approach.

At the time of writing this Report, however, the EPAS Program currently does not have a formalised and endorsed approach for future site activations beyond the nRAH.

The approach for future site activation in 2015-16 was to be endorsed by the EPAS Program Board and included in the Cabinet submission originally planned to be prepared in early 2015. However, the submission has been delayed until June 2015. Subsequent discussions with SA Health representatives identified that planning for future site activation following the nRAH is now planned to commence in February 2016.

It is expected that a future Cabinet submission will detail resource requirements for further site activation. It is now estimated that completion of the rollout of the EPAS solution across all sites originally in scope is now likely to take until 2017-18.

Risk

A lack of implementation direction beyond the activation at the nRAH increases the risk of uncertainty of the rollout schedule, budget pressure, loss of key staff, retraining effort and potential delays in implementation.

Recommendation

SA Health should continue to work to ensure appropriate due diligence is performed on the implementation approach for future SA Health sites. This includes allowing sufficient time to complete all required pre-activation activities, gaining a clear understanding of the total expected effort required and timing considerations of other enterprise programs and expected key dependencies of the EPAS Program.

SA Health response

The EPAS Program has conducted preliminary resource planning for future sites. In the lead up to the decision to deploy the nRAH as the next site, the program undertook a series of scenario planning exercises to assess deployment options at other in-scope hospitals including schedule and resource requirements.

The EPAS Program is currently conducting planning work with relevant nRAH personnel and key stakeholders.

Once the EPAS deployment into the nRAH is further progressed, scenario planning work will continue for other in-scope sites. Deployment timing and approach will depend on the success of the EPAS rollout into the nRAH and will include the needs and impact on the existing LHNs.

2.9 Concluding comment

The EPAS Program's strategic approach has changed from the sequential 'waterfall' approach to an approach where functionality is incrementally built as needed for deployment at the particular site.

Challenges experienced by the EPAS Program can be partially attributed to the original plan having ambitious timeframes and an under estimation and lack of detailed understanding of the effort required. In particular, the underestimation of effort required to implement EPAS at a major hospital site.

Although Audit has noted a number of improvements to the EPAS Program, challenges still remain, including ensuring system readiness for the nRAH by 17 January 2016 for SOC testing and commercial acceptance on 17 April 2016.

Audit notes that the end outcomes of EPAS are still not fully known and EPAS is facing a considerable reduction in benefits. However, Audit does acknowledge that SA Health continues to work through program issues and product uncertainty and has made a number of program changes. Changes included the revised EPAS Program strategy to stabilise and relaunch the product. The Program also continues to work with Allscripts to ensure that a functional product build is produced that is capable of replacing a number of legacy SA Health systems.

3 Oracle Corporate System and Camden Park distribution centre

Since July 2010, SA Health has been implementing components of its new financial management system, Oracle Corporate System (OCS), to replace SA Health and health unit legacy general ledger and financial systems.

The system aims to provide a whole-of-health integrated financial management system, which includes procurement and supply chain management functionality.

3.1 Audit objective and approach

Throughout the implementation of OCS, Audit has noted project delays, increased costs and reduced benefits due to implementation problems. Since last year's December 2014 Supplementary Report commentary on OCS, Audit has maintained an ongoing review of the OCS implementation status.

The objective of this review was to obtain an understanding of the current OCS Program implementation status, budget and expenditure to date, program risks and operational risks of the production system. In addition, as part of the overall supply chain process, Audit sought an understanding of SA Health's Camden Park distribution centre (distribution centre) impact and readiness for the nRAH.

Audit's review has involved relating with OCS Program representatives and reviewing:

- SA Health's Risk Management and Audit Committee (RMAC) meeting documentation
- program governance documentation, including minutes of SA Health's eHSC and One Procurement Solution (OPS) Program Board
- effectiveness of selected operational controls at the Flinders Medical Centre (FMC) and information security controls applied at an SA Health corporate level
- SA Health responses to Audit information requests.

3.2 Key audit findings

Audit's 2014-15 review has noted the following OCS Program and distribution centre issues and operational risks, which are explained further in section 3.6 of this Report:

- OPS Program benefits have been reduced from the original program estimate
- distribution centre capacity issues have resulted in increased costs to the nRAH Program and potential reduction of benefits
- operational OCS risks were identified, including:
    - excessive privilege user access granted
    - potential segregation of duties conflicts
    - insufficient controls over purchase requisition approvals.

3.3 Program background

In November 2009, Cabinet approved the implementation cost of OCS at $22.853 million (predominately investing expenditure of $21.14 million). This implementation was originally planned to be undertaken in two phases, with all releases to be implemented by November 2010. Due to implementation problems, the full rollout of OCS was not completed by that date.

To finalise the rollout of OCS, a new program phase (Phase 3) was initiated by SA Health, after approval by Cabinet in December 2012. This phase is known as the OPS Program.

OPS involves the completion of the procure-to-pay and supply chain system deployment across SA Health. OPS also includes the additional scope deployment of the Shared Services SA Basware solution, for imaging and accounts payable workflow, to increase automation of the procure-to-pay process.

3.4 OCS and OPS implementation status update to June 2015

3.4.1 OCS implementation status

OCS Phase 1 (financials) was implemented in July 2010 at all locations identified in the OCS Program plan. This primarily involved some accounts payable and accounts receivable functions, general ledger maintenance and reporting, budgeting and forecasting.

Phase 2 (procurement, supply chain and some financials) consisted of inventory management, product information management, iProcurement, purchasing, order management, warehouse management, accounts payable and cash management. Phase 2 implementation was completed in December 2010 but was limited to five sites, including Modbury Hospital.

The remaining components of the OCS implementation have been incorporated in the OPS Program and are discussed below.

3.4.2 OPS implementation status

SA Health's December 2012 Cabinet submission indicated that completion of the OPS deployment was originally expected in the second quarter of the 2014-15 financial year. This deadline was not achieved, with delays primarily attributed to difficulties recruiting suitably qualified implementation staff.

As a consequence, a revised implementation plan was formulated by SA Health, with the remaining sites to have OPS deployed in six groups. The revised estimated completion date was July 2015. Based on experience of the time required to implement the first two groups of health sites, the estimated completion was then further revised, with a program scheduled close date of August 2015.

As part of the revised implementation plan, a review process was to be undertaken following the deployment of each implementation group. Improvements identified from each review were to be adopted for subsequent implementation groups, including any program management improvements identified.

The first three implementation groups were completed in December 2014. This included major hospital sites, such as the FMC, Lyell McEwin Hospital (LMH), existing RAH and The Queen Elizabeth Hospital (TQEH).

The fourth group of hospital sites, including the Women's and Children's Hospital Health Network Incorporated (WCH), was implemented on schedule in February 2015.

The fifth group of hospital sites was implemented in May 2015. This included SA Pathology and hospital services at Port Pirie, Whyalla, Southern Flinders and Mid North.

At time of writing this Report, SA Health anticipated that the sixth (and final) group of hospital sites was due to go live on 13 July 2015 at a number of Country Health Services.

3.5 Summary of the OCS and OPS Program budget and a status update

The original approved OCS Program implementation cost was $22.853 million (predominantly investing expenditure of $21.14 million). This amount was revised upward in a December 2012 approved Cabinet submission following a revisit of the OCS rollout, including the introduction of Phase 3 (OPS). This resulted in an expected total implementation cost of the three separate implementation phases to be $62.445 million.

The $62.445 million included an OPS Program cost of $25.349 million and transitional staffing costs of $15.15 million,[9] with the remainder attributed to the OCS Program Phases 1 and 2. The operating expenditure (excluding depreciation) for OCS over 10 years to 2021-22 was expected to be $97.742 million.

The revised budget adjustments, noted in the December 2012 Cabinet submission, also highlighted that improvements were required in a number of program management areas.

To address these requirements, SA Health advised that an experienced program director was engaged in June 2013 to manage the OCS/OPS Program. Additionally, improvements to program management processes were intended to be implemented, including weekly status and schedule reviews, quality processes, financial tracking and a more comprehensive governance reporting regime.

Audit's December 2014 Supplementary Report noted there was no change to the overall budgeted amount of $25.349 million assigned to the OPS implementation (Phase 3), despite a minor extension to the rollout schedule to August 2015. However, the program had requested approval to release $3.284 million in contingency funding to provide additional resources for the rollout of the remaining health sites.

In response to a budget status update request, SA Health advised that at the end of April 2015, the Phase 3 actual costs were $19.566 million and the estimate at completion was $24.868 million. This is $481 000 lower than budgeted in the December 2012 Cabinet submission.

[9] In relation to the transition costs, while not viewed by SA Health as strictly a cost of the implementation program, they do materially impact the program. This is through reduced benefits in the total cost of ownership business case and the requirement for funding until implementation of OCS is completed.

A summary of the budget as at April 2015 for OCS and OPS is outlined in the following table:[10]

	Approved budget $'000	Expenditure to date (April 2015) $'000	Remaining budget $'000
Phases 1 and 2 completed	22 853	21 946	907
Phase 3	20 628	16 232	4 396
Phase 3 contingency	3 814	3 334	480
Additional transitional staffing cost	15 150	Not supplied	Not supplied
Total budget	**62 445**	**41 512**	**5 783**

3.6 Key issues and audit concerns

Audit notes that the OCS Program and distribution centre have been presented with challenges.

The March 2015 OCS Phase 3 risk register recorded 17 active risks, of which nine were considered medium risk.

Additionally, a number of operational risks with OCS have been identified through Audit's recent review of the operating effectiveness of certain controls at the FMC and at an SA Health corporate level. Notable issues impacting the OCS Program and current operational controls are discussed further below.

3.6.1 OPS benefits have been reduced from the original program estimate

As reported in December 2014, SA Health produced an update to the project's benefits realisation plan, which was submitted to Cabinet in August 2014. This benefits realisation plan took into consideration delays in some start-up activities and a revision of the business model using the distribution centre to service all health sites.

The revised plan indicated an anticipated reduction in benefits from the original total cost of ownership of over $30 million across the 10 year period (2013-14 to 2022-23). This was compared to the expected benefit realisation advised in the July 2013 update of $85.9 million over that period.

At the time of writing this Report, the expected benefits to be realised over a 10 year period (now ending 2021-22) are shown in the following table:

Expected benefit description	Totals $'000
Reduction of full-time employee count enabled in SA Health's Finance and Administrative Services division	28 667
Reduction of full-time equivalent count as part of the Procurement Supply Chain Reform enabled	8 130
Reduction in Shared Services SA accounts payable service costs	10 500
Reduced cost of managing accounts payable by decommissioning the SA Health Invoice Management Team	10 031
Totals	**57 328**

[10] The expenditure to date and remaining budget figures were taken from SA Health's correspondence with Audit in May 2015. These figures have not been audited.

Audit notes that estimated benefits of legacy system decommissioning were not included in the table. Audit was advised these benefits are yet to be confirmed by the EPAS Program and if realised will be assigned to EPAS and not the OPS Program.

In addition, the anticipated Shared Services SA accounts payable savings will not affect SA Health's budget. These savings are expected to have a positive impact on the Department of the Premier and Cabinet's budget.

Despite the program still having an overall positive expected benefit from OCS/OPS, the expected benefits were reduced from the July 2013 estimate of $85.9 million.

Risk

Although the planned OPS Program completion is late August 2015, if additional delays to the program or changes to the operating model occur this may further erode the planned financial benefits.

Recommendation

Once the program implementation has been completed SA Health should regularly track the realisation of predicted tangible benefits.

SA Health response

The Program Board reviews the benefits on a monthly basis and following program closure SA Health will monitor the realisation of predicted tangible benefits through the Business Owners.

3.6.2 Distribution centre capacity issues have resulted in increased costs to the nRAH Program and potential reduction of benefits

In February 2014, an independent review of the distribution centre titled 'Supply Chain Review' was conducted.

That review concluded that the distribution centre, including the Oracle warehouse management module, was not ready to support the proposed supply chain and distribution model for SA Health. In addition, future transactions and inventory holdings were expected to outgrow the current configuration and processes.

As reported in December 2014, until capacity issues are addressed and reform is implemented, SA Health cannot fully realise the originally anticipated centralised distribution model, which included expected savings of $2.9 million per annum from 2014-15. The loss of savings was included in the $30 million anticipated reduction in benefits previously noted. SA Health advised that until the distribution centre capacity issues are resolved, it will continue to operate as a traditional distributor. This requires SA Health sites maintaining bulk warehouses, instead of the distribution centre providing the planned 'direct to imprest' supply model.

In response to the distribution centre capacity issues, an August 2014 Cabinet submission advised that a project had been started to identify feasible delivery options and to develop a business case for change.

In December 2014, Cabinet approved the business case for investing $8.315 million dollars in modifying the existing SA Health Distribution Network. The approved option involved investment in an equipment kit solution at the distribution centre. This is to enable investment in an upgrade of the distribution centre to proceed and facilitate the transition to the direct to imprest model. SA Health advised that the business case addresses many of the 85 recommendations raised in the February 2014 review, including the requirement to reconfigure the OCS warehouse management module from supporting the current site warehouses to the planned direct to imprest model.

SA Health expects the Cabinet approved investment initiative to deliver a $10.79 million saving over 10 years (2014-15 to 2023-24) compared to the current budget, with a payback period of five years. SA Health also expects delivery of certain productivity gains necessary to support the nRAH and SA Health's new procurement and supply chain model. The initiative is also expected to reduce risks associated with the projected growth in demand for health services.

In recent communications with the nRAH Program representatives, Audit was advised that the distribution centre is not expected to be immediately available for use to fully service the nRAH. As a consequence, the nRAH Program is in the process of investigating temporary alternative solutions to cover an initial 6-9 month period from the initial operation of the nRAH.

These temporary alternative solutions include:

- Option 1: running additional shifts at the distribution centre and expanding operations to seven days a week
- Option 2: offsite sub-distribution centre operated by SA Health
- Option 3: third party interim supply chain service arrangement.

SA Health advised that an alternative solution is to be funded within the nRAH Program budget, with an allocation of $1.49 million in contingency funding. Further funding may be required if the implementation to a direct to imprest model from the distribution centre is not completed within the six to nine month period.

Following Cabinet approval of the business case for the distribution centre in December 2014, SA Health completed a recruitment process in early 2015 to establish a project team, with responsibility to deliver the agreed distribution centre reforms.

In April 2015 the project team commenced, comprised of four project team members and a Project Director, reporting to the Chief Procurement Officer. SA Health advised that the project team has undertaken a number of activities in its first month of engagement, including:

- establishing the project's steering committee and terms of reference
- developing a high level project timeline for the various workstreams, including procurement, distribution centre facilities, ICT systems, workforce planning and consultation, and project management and communication

- completing preliminary meetings with various interconnecting business areas and project streams to understand interdependencies, key milestones and identify areas of potential risk for further investigation.

During the upcoming months, the project will focus on a number of key activities. These include developing the overall project and quality plans, completing initial schedules for all major project streams, conducting a project risk assessment and finalising the procurement framework.

Risks

Without appropriate contingency plans in place the nRAH may not have all required medical and office supplies delivered in a timely manner for the first six to nine months following commercial acceptance.

Any additional delays or ongoing issues with the capacity of the distribution centre may result in further reduction of the overall expected benefits to be realised.

The SA Health distribution centre project team and the nRAH Program may not identify and address all distribution workflows and integration requirements relevant for nRAH operations.

Recommendations

The SA Health distribution centre project team should continue to supply sufficient resources with appropriate contingencies in place to complete all program objectives and deliverables.

The SA Health distribution centre project team should address all distribution centre reform activities in a timely manner, with regular communication with the nRAH Program.

The nRAH Program should continue to develop interim supply arrangements to ensure nRAH requirements are met, with regular communication with the SA Health distribution centre project team to ensure any associated impact to the distribution centre is identified and agreed.

SA Health response

The distribution centre project team has been resourced with five full-time employees, as well as a Cabinet approved budget for capital and operating expenditure. The Distribution Centre Project Steering Committee will regularly review project financials, and will assess the level of contingency funding on an ongoing basis.

The nRAH Program is represented through formal membership on the Distribution Centre Project Steering Committee. This ensures there is regular communication with the nRAH team. The distribution centre project team also has regular communication with other nRAH team staff.

The nRAH Program has confirmed that the nRAH team is continuing to develop an interim supply chain solution. A Supply Chain Sub-Committee (SCSC) has been established to oversee the delivery of the interim solution. The SCSC has representation from the nRAH Program, CALHN, SA Health distribution centre and OCS.

3.6.3 Operational OCS risks were identified

Audit has previously reviewed and reported on OCS production security controls at selected sites.

In 2014-15, Audit again conducted a review of certain operational control aspects relating to OCS.

This review, completed in June 2015, included examining the operational effectiveness of key business processes associated with the procurement, supply chain and inventory management (OPS modules) of OCS at an individual health site. Aspects of general information technology and security controls applied at the overall OCS enterprise level were also reviewed.

Audit's June 2015 review highlighted the following issues:

- excessive privilege user access granted
- potential segregation of duties conflicts
- insufficient controls over purchase requisition approvals.

Risks

Inappropriate user access increasing the risk of unauthorised access or fraud.

The ability to reliably identify and mitigate segregation of duties conflicts is reduced and conflicting access may not be prevented or detected.

May result in purchases being made which are not in line with the requirements or budget of the respective cost centres.

Recommendations

SA Health should address the above issues in a timely manner.

SA Health response

SA Health will address the issues in accordance with the findings, recommendations and management responses to the separate Audit OCS controls report.

3.7 Concluding comment

SA Health has made progress in implementation OPS across all remaining sites.

It is anticipated that overall the OPS Program will have a positive expected benefit of approximately $57 million over 10 years. In addition the estimated completion of the OPS is now $481 000 lower than was budgeted in the December 2012 Cabinet submission.

Despite the progress of the OPS Program there are a number of challenges that may impact expected benefits to the distribution network. Of particular concern is that until the Cabinet approved investment initiative to modify the existing SA Health Distribution Network is completed, the distribution centre will not have the capacity to support the proposed SA Health supply chain and distribution model. In the interim, an alternative distribution solution is required, with the associated impact on the nRAH to be funded within the nRAH Program budget.

4 Enterprise System for Medical Imaging

The SA Government announced the consolidation of imaging services across SA Health as part of the 2010 State Budget. The aim was to improve efficiency, and provide a more cohesive, consistent, and accessible state-wide service.[11]

One of the key enablers to achieve the clinical, quality and efficiency benefits underpinning the establishment of SA Medical Imaging is the implementation of the ESMI. Three technologies comprising this system are:

- an Enterprise Radiology Information System (RIS) – used to record, store, manage and distribute patient medical imaging data and imagery. RIS complements Patient Administration Systems (PAS) and provides data for billing
- an Enterprise Picture Archive and Communication System (PACS) – provides for storage and convenient access to images from multiple modalities,[12] thus eliminating the need to manually create, file, retrieve or transport film jackets
- a Voice Recognition System (VR) – used by radiologists to produce medical imaging reports without an intermediary typing stage, to enable quicker provision of results to referring clinicians, their patients and clinical departments.

It is currently intended that this system will be implemented across SA Health medical imaging sites in metropolitan and country areas. This aims to provide the capacity to manage over 675 000 images and reports per annum to be used by over 600 SA Medical Imaging users and accessed by thousands of clinical users, both internal and external to SA Health.

In particular, ESMI is a critical system for the operation of the nRAH. Without an ESMI system at the nRAH, especially the RIS component, patient care would be compromised. In particular the nRAH's emergency department and intensive care units require urgent onsite imaging capabilities to ensure timely diagnosis for the commencement of treatment.

SA Health's SA Medical Imaging vision (2014-2017) has identified ESMI as the platform to implement an integrated state-wide imaging solution.

4.1 Audit objective and approach

The objective of this review was to obtain an understanding of the current ESMI Program implementation status, budget and expenditure to date, key risks and the system's impact and readiness for the nRAH.

Audit's review has involved relating with both ESMI and nRAH Program representatives and reviewing program documentation, including:

- the ESMI business case
- nRAH imaging scope planning documentation
- ESMI system architecture documentation
- ESMI Program board minutes
- SA Health's eHSC meeting minutes.

[11] SA Health Business Case for an Enterprise System for Medical Imaging (ESMI), December 2011.

[12] Modality is the equipment that is responsible for the acquisition of the medical images, including computed tomography, magnetic resonance imaging, ultrasound, computed radiography, digital radiography and nuclear medicine, and other such devices.

4.2 Key audit findings

Audit's 2014-15 review has noted the following key ESMI risks, which are explained further in section 4.7 of this Report:

- implementation to the nRAH has significant challenges
- ESMI budget and contingency may be insufficient to finalise full implementation
- development of some key ESMI interfaces remains in progress
- the ESMI Program has experienced a lack of resources
- the ESMI Program gateway review raised areas for improvement.

4.3 Program background and drivers

Historically, a number of different imaging systems and processes are used across SA Health sites. As a result, clinicians are unable to efficiently share patient's X-ray, magnetic resonance image (MRI) or other medical images between hospitals.

In addition, the radiology information system (Kestral) used by various hospital sites has limited functionality. Kestral does not support modern imaging practice, there is limited ability to upgrade and modify the system and it is nearing the end of its life.

In relation to PACS, there is no commonly configured PACS environment across SA Health sites to support sharing of medical images. The legacy systems (Careconnect/OACIS) used by some sites provides insufficient image quality to meet the diagnostic requirements of certain specialties and does not adequately support general practitioners accessing images.

Of particular concern were Country Health SA Local Health Network Incorporated (CHSA) and the WCH which at the time did not have a PACS. This deficiency was the subject of critical incident reports and Coroners' findings.[13]

SA Health developed the ESMI business case in December 2011 to address these deficiencies. The business case states that ESMI is intended to provide access and visibility of imaging results anywhere across SA Health to support patient care.

If the ESMI implementation successfully meets all of its aims, it will provide consistent and coordinated patient care during imaging consultations. This will be through the availability of accurate and relevant information and the reduction of duplication of imaging procedures. The system is also planned to provide a standard and efficient workflow for all SA Medical Imaging staff, eliminate manual based systems and contribute to achieving SA Medical Imaging savings targets.

Lastly, it is expected that ESMI will improve responsiveness and timeliness to referring clinician requests and medical imaging service requirements, allow the patient to choose where they have their image taken based on a common booking system and provide effective diagnostics, billing and report distribution.

[13] Extract from Coroners' report by Anthony Schapel, Deputy State Coroner, South Australian Coroners Court, Preliminary Finding after Inquest – Amber Jayne Sweetman (Issued 6 October 2011).

4.4 Initial ESMI implementation approach

The ESMI Program mandate was approved by the ICT Steering Committee in February 2011. Following this, in March 2011 SA Health sought responses from the market through a Request for Proposal procurement process for an enterprise system for SA Medical Imaging.

Carestream was selected as the preferred vendor in August 2011.

The ESMI business case, dated December 2011, presented three options:

- Option 1 – implement an integrated RIS/PACS/VR system as an enterprise solution across 59 SA Health sites (preferred option)
- Option 2 – same as Option 1, but was to include all SA Medical Imaging sites (71 SA Health sites). Was not the preferred option due to the extra costs and the requirement to terminate existing private provider arrangements with 12 sites
- Option 3 – do nothing and continue to use the current suite of legacy systems and manual processes. This option was not considered within the business case to be viable and was deemed to not provide SA Health with the required efficiency gains, or long-term reforms, that provide quality, patient safety and responsiveness of medical imaging services.

Option 1 was preferred and was subsequently approved by Cabinet in December 2011.

The December 2011 business case included a high level timeline for SA Health site implementation. The implementation scope was listed as six metropolitan hospitals, two CHSA reporting sites and 51 non-reporting CHSA sites. The business case stated that detailed planning and scheduling of these sites would occur once the vendor, Carestream, provided their implementation planning study.

Rollout to the in-scope sites was expected to be completed by the end of 2013-14 financial year. It was indicated that the highest priority sites were TQEH, LMH and WCH.

Of particular note was that the nRAH was excluded from the original ESMI business case. SA Health advised Audit that the nRAH was excluded given the expected timeframe for completion which included the existing RAH. ESMI was anticipated to be transferred across from the existing RAH with the migration of certain other existing systems to the nRAH.

4.5 Initial ESMI budget

The total program budget approved in December 2011 was $19.223 million.

This budget comprised approximately $15.779 million in capital project costs attributed over three financial years (2011-12, 2012-13 and 2013-14) and a capital contingency of $3.444 million.

Costs to the program include:

- enterprise licencing
- configuration and implementation of the software

- purchase and installation of required ICT infrastructure
- implementation of operational processes
- business change management including communications, training and business readiness activities.

Out of scope project costs notably included purchasing and implementing medical imaging modalities, supporting building equipment and infrastructure, providing medical imaging peripheral devices and infrastructure to support viewing requirements and interfacing with EPAS.

The business case outlined expected recurrent savings of $1.22 million over seven years, reducing the total cost of ownership to $18.002 million. The project was estimated to incur new operating costs in the first two years, including increased resources and new ICT infrastructure. Operating costs were expected to reduce through the remaining five years of the seven year total cost of ownership as the system was rolled out across SA Health sites and existing legacy systems were decommissioned.

Despite the expected recurrent savings, at the time of writing this Report, SA Health has not developed a full benefits realisation plan specifically for ESMI.

4.6 Updated ESMI implementation approach and current budget

4.6.1 Revised implementation plan

Audit was advised that in February 2013, the Minister for Health approved SA Health's recommendation that a slowdown of the ESMI Program would occur. This primarily resulted from the recommendations of an external review that expressed concerns regarding the number of concurrent ICT projects being performed by SA Health.

Despite the program slowdown, the ESMI implementation was to progress at the WCH. This was due to issues raised in the Coroner's inquest from not having digital imaging functionality at this site. It was intended that once implemented at WCH, a gateway review would be conducted and SA Health would subsequently seek Minister for Health approval for further ESMI implementations.

Due to critical operational issues, such as high system unavailability and temporary loss of patient information for some legacy systems, it was subsequently determined that the ESMI implementation at TQEH and LMH was a priority.

In January 2014, SA Health received approval from the Minister for Health to:

- deploy ESMI at TQEH and LMH to address the identified operational issues
- deploy ESMI at TQEH as the first site and the WCH as the second site
- perform an ESMI gateway review after the implementation of the first two sites, concurrently with the implementation at LMH.

A summary of the results of the ESMI gateway review was provided to the Minister for Health in December 2014. The primary recommendation was that the ESMI Program continue to plan for and deliver implementation to additional sites. It also recommended that planning for ESMI implementation needed to be expanded to include those sites necessary for

an efficient and effective lead up to the implementation of ESMI at the nRAH. In January 2015 the Minister for Health noted these recommendations and approved the implementation plan to revert back to the original in-scope sites.

In February 2015 the ESMI Program redeveloped the original implementation plan with revised implementation dates. The revised dates for implementation included LMH (May 2015), existing RAH (August 2015), FMC (October 2015), Repatriation General Hospital (December 2015), Murray Bridge Soldiers' Memorial Hospital (February 2016) and Riverland Regional Health Services in March 2016. The expected project close date was revised to March 2016 from the original 2013-14 financial year end.

ESMI implementation has been completed at the WCH (September 2014), TQEH (November 2014) and LMH (May 2015).

Although the revised plan noted the exclusion of the nRAH, the program had completed a high level planning exercise in December 2014 for implementation of ESMI into the nRAH.

A large shift in the ESMI Program focus occurred in early 2015 following the identification of risks defined in the nRAH business case, which included medical imaging. Audit was advised that in March 2015, the eHSC approved inclusion of ESMI into nRAH planning.

At the time of writing this Report the detailed planning work was in progress. Audit was advised that the Minister for Health will be briefed following completion of this planning when the full impacts of ESMI to the nRAH are understood.

The ESMI Program maintains that ESMI will be implemented into the existing RAH, planned for August 2015. This is a key milestone towards implementing ESMI in the nRAH.

ESMI implementation activities to the existing RAH are progressing. Audit notes, however, that the current data migration solution requires an extended period where the hospital is required to work in business continuity planning mode. This was deemed unsuitable for the hospital operations. At the time of writing this Report, the ESMI Program was presenting the existing RAH with data migration options to reduce the business continuity planning timeframe (or system downtime).

4.6.2 Current ESMI budget

A summary of the ESMI budget as of March 2015 is outlined in the following table:[14]

	Original approved budget (December 2011) 2011-2014 $'000	Expenditure to date $'000	Remaining budget $'000
Capital costs	15 779	12 793	2 986
Contingency	3 444	383	3 061
Total budget (ex GST)	**19 223**	**13 176**	**6 047**

The nRAH ESMI implementation planning activities are to be funded by the nRAH ICT Program. A September 2014 approved Cabinet submission for the nRAH included funding the implementation of key enterprise systems, including ESMI (but excluding EPAS). This funding was estimated at $2.6 million.

[14] Note: The expenditure to date figures were taken from a March 2015 SA Health report, which has not been audited by the Auditor-General.

4.7 Key program risks and audit concerns

Audit notes that the program has been presented with certain challenges, including adjustment of scope. The March 2015 ESMI risk register has raised 14 active risks, of which three were considered high.

Notable issues impacting the ESMI Program are discussed further below.

4.7.1 Implementation to the nRAH has significant challenges

Similar to the other hospital sites, the dispersed imaging model to be employed through the implementation of ESMI is a key component of the nRAH model of care. The nRAH Operations Board advised that it allows patients to access imaging services where needed, removing blockages within patient care pathways and reducing waiting times.

The imaging model for the nRAH has been designed with four dispersed imaging hubs distributed over four floors. This is intended to incorporate dedicated services for outpatients, inpatients, emergency and intensive care. The nRAH design also includes a centralised image reading room, which is expected to be capable of servicing the needs of all four of the imaging hubs throughout the hospital, as well as potentially providing an image reading service for other hospitals around South Australia.

As previously mentioned, in March 2015, the eHSC approved the inclusion of the nRAH into the ESMI Program scope. As part of this approval the nRAH ICT Program will fund the associated planning and ESMI Exception Report[15] development. This Exception Report is intended to be presented to the eHSC to seek formal approval of any impacts to the ESMI implementation timeline and identify the source of funding for the nRAH delivery. It is expected that this will require release of nRAH ICT contingency funds, which will require approval from the nRAH Steering Committee.

Audit notes that this planning, will need to incorporate some manual configurations for the nRAH, including a number of modalities. Notably, magnetic resonance imaging, computed tomography scanners, CT planning simulators, X-ray imaging services including digital radiography X-ray and orthopantomogram. Other items also require configuration to support medical imaging workflows, including: rooms, users, appointments, staff profiles including access permissions, procedure codes and providers.

The ESMI solution also requires customised integration with other enterprise systems including: PAS solution, modalities, Health Information Broker for communication with other systems, Enterprise Master Patient Index, billing and revenue collection system, visualisation tools, existing PACSs (to support migration), management information and OACIS for critical results tracking.

Given the complexities mentioned above, the nRAH Program completed contingency planning exercises for the nRAH. These exercises initially considered alternative medical imaging options, such as the continued use of the Kestral legacy imaging system. The use of any legacy system for the nRAH was dependent on two key milestones: a PAS decision (EPAS or Acute Patient Management System) at the nRAH and ESMI implementation at the existing RAH.

[15] The purpose of the Exception Report is to formalise alterations to the original ESMI Business Case. This includes changes to project scope and budget.

At the time of writing this Report, the nRAH Program is still in the detailed planning stage of an imaging solution at the nRAH. The outcomes of this stage include producing a program schedule, resource plan and a program implementation plan. The detailed implementation plan is expected to be completed and presented to the ESMI Program and will include details of the build and system testing stages.

Following completion of system testing, the nRAH ESMI build will be required to be delivered to the nRAH Program for system integration testing before the nRAH's SOC testing deadline of 17 January 2016.

In reviewing the ESMI Program, Audit considers the tight remaining timeframes for nRAH integration testing remain a major concern. If there are delays in the ESMI solution implementation and/or significant ESMI issues are identified during initial testing, these have the potential to impact the achievement of the nRAH's SOC deadline.

Audit notes that the ESMI Program risk register documents certain mitigation activities that are progressing that may reduce this risk. These include ongoing communications between all key stakeholders, in particular the nRAH and ESMI Program Directors, monitoring interdependencies and forecast impacts and publishing regular program status updates to the ESMI Program Board and the eHSC. However, Audit notes that complete mitigation strategies will not be fully identified until a risk assessment is conducted as part of the detailed planning process, which has yet to be completed.

Risks

ESMI, or an alternative legacy system, may not be ready before the nRAH's SOC testing deadline of 17 January 2016.

ESMI, or alternative legacy system, may not be fully operational and/or have the required integration with other in-scope nRAH systems. As previously mentioned, without an operational medical imaging system patient care would be compromised.

Recommendation

The ESMI and nRAH Programs, with assistance from the vendor, should continue to apply focus on ensuring a functioning medical imaging system is in operation before the nRAH's SOC testing commences.

Any new ESMI scope change requests that may increase complexity and provide additional resource and time pressures should be strictly controlled.

Outcomes of the risk assessments performed as part of the nRAH detailed planning stage should be given appropriate priority and management attention.

SA Health response

The ESMI and nRAH Programs are collaborating to develop the plan and Exception Report to transfer funding held in the nRAH contingency for the purpose of transitioning ESMI to the nRAH and meet the critical nRAH milestones such as SOC testing.

The ESMI Program maintains tight scope control and any changes require eHSC approval.

On receipt of the risk assessment from the nRAH detailed planning stage, the ESMI Program will assess the mitigation actions and promptly escalate any impact on the ESMI nRAH delivery to the Director, eHealth Portfolio and Strategy. Where required these escalations will be referred to the ESMI Program Board.

4.7.2 ESMI budget and contingency may be insufficient to finalise full implementation

At the time of writing this Report the ESMI Program has expended approximately 68.5% of the original approved program budget, with ESMI implementation estimated by the program to be 65% complete. ESMI is currently operational in three metropolitan hospitals (WCH, TQEH and LMH).

Approximately $6 million of the original budget (including contingency) remains to complete implementation at the remainder of the in-scope SA Health sites. The program's implementation planning in 2015 has forecast it will use 95% of its available contingency budget to achieve implementation to the program's in-scope sites.

SA Health has advised Audit that although the ESMI Program is estimated to be 65% complete, a large portion of effort has been expended on 'model office' setup and back-end infrastructure, which will benefit all remaining sites. Despite this progress, Audit considers that implementation to the remaining in-scope sites may require additional funding.

Audit has noted a number of challenges that may impact the program budget. These include the program experiencing a number of scope changes; solution and support issues being experienced at WCH and TQEH; and the ESMI Program originally having some deficiencies tracking all financial expenditure.

Finally, at the time of writing this Report, it was understood that only indicative cost planning estimates were used for the ESMI implementation at Murray Bridge and Riverland Regional Health Services. Audit notes that implementation to these two sites is subject to further technical analysis of a suitable solution, as both sites use the legacy Chiron PAS system, which is not interfaced with the Health Information Broker system and does not have Enterprise Master Patient Index installed. As such, additional development will be required to interface with Chiron and investigate a solution for the use of Kestrel patient identification numbers. Although the ESMI Program has estimated indicative costs, until a full technical analysis is completed the full budget implications from these system interface requirements is uncertain.

Risk

The ESMI and nRAH Programs may not have sufficient funding for the full cost of the implementation across all in-scope sites.

Recommendations

Estimated costs to complete implementation to the remaining sites should be reviewed and confirmed.

Up-to-date expenditure monitoring to facilitate responses to identified budget risks should be maintained.

The Program should continually reassess and report on the program's budget position to the various governance boards, such as the ESMI Program Board and eHSC.

SA Health response

The ESMI Program Board has approved a review point post-RAH implementation and nRAH planning to assess the delivery model for future sites and the solution design for Berri and Murray Bridge. This will confirm the costs.

The ESMI Program maintains up-to-date expenditure monitoring. Forecasts are reviewed monthly and the financial position is reported to the ESMI Program Board and the eHSC. SA Health acknowledges the risk to the budget, the program is currently forecasting to complete its rollout within its approved budget, following budget adjustments to reflect nRAH contingency funding.

The current planning for the nRAH will identify the associated costs.

4.7.3 Development of some key ESMI interfaces remains in progress

Recent program status updates have noted that the ESMI Program still required development of some key interface dependencies for certain sites. These include:

- an interface with EPAS to receive electronic online ordering of patient medical imaging services
- external referrer report transmissions and digital templating for orthopaedic surgeons.

Risk

Until all required in-scope ESMI interfaces have been developed, there is a risk of program delays, cost overruns and the introduction of temporary workarounds.

Recommendation

Given the importance of ESMI to the nRAH, the program should focus on developing the minimum required ESMI interfaces for initial operation at the nRAH.

SA Health response

The nRAH planning study will identify and plan for all in-scope interfaces. On receipt of the plan the ESMI Program will assess the interface requirements and identify any candidates for exclusion.

4.7.4 Program has experienced a lack of resources

The ESMI Program was presented with certain resource challenges during September and November 2014, with the transition of two program directors and resignation of five key stream and functional leads. These resource changes occurred whilst the program was supporting live sites, planning activations for LMH, managing program finances and scope and focusing on the recruitment of replacement resources.

The ESMI Program team was restored to full strength in January 2015.

Despite the restoration of ESMI resourcing, the ESMI Program still considers resourcing to be a risk to the program. This includes critical resources to complete the program and SA Medical Imaging ICT resources to support ESMI.

Risk

Resourcing challenges may require implementation dates to be revised.

Recommendations

The Program should continue to actively monitor resource needs for the program, taking into consideration ongoing ESMI business as usual support needs at implemented sites.

To assist the program during peak program activity periods and/or to cover any loss of program resources the Program should:

- determine any potential internal back up resources that could be used
- examine the adoption of rapid recruitment techniques
- liaise with the vendor regarding the availability of vendor resources.

SA Health response

The ESMI Program actively monitors resource requirements and has moved to secure critical resources with longer term contracts. Where possible, internal backup resources will be identified and made available. The program works with the service delivery teams to secure ESMI services. SA Medical Imaging staff have been leveraged for support services and agency contractors are engaged as required. Furthermore, the eHealth Program Management Office continually assesses opportunities to utilise experienced program resources from programs that are winding down, such as OCS.

Discussions are ongoing with Carestream to ascertain vendor resource availability.

4.7.5 ESMI Program gateway review raised areas for improvement

In December 2014 an ESMI Program gateway review was completed.

This gateway review raised a number of areas for program improvement. Notably, standardisation of planning and execution, strengthening project management discipline, project resourcing, vendor engagement, oversight and governance, benefits management and leadership.

In response, the ESMI Program detailed remediation activities which were approved by the eHSC in February 2015. At the time of writing this Report, the program continues to progress actions to address these findings.

Risk

If these gateway recommendations are not fully addressed in a timely manner, they may impact program deliverables.

Recommendation

Recommendations raised by the ESMI gateway review should continue to be addressed in a timely manner.

SA Health response

Recommendations are recorded as issues in the program's issue register and are actively reviewed with actions managed through to completion.

4.8 Concluding comment

ESMI is implemented at WCH, TQEH and LMH.

The ESMI Program's ability to meet all required and committed outcomes to the remaining sites is highly dependent on other major SA Health programs, including EPAS and nRAH requirements. In addition, budget and resource requirements to complete the ESMI Program implementation and provide ongoing support remain an ongoing challenge.

Given the tight timeframes to implement the ESMI solution at the existing RAH and the nRAH, significant focus will be required to ensure implementation is finalised in a timely manner, with integration of all key ESMI interfaces effectively operating.