Review to assess the efficiency, effectiveness and financial performance of SA Medical Imaging services

Volume 2. Detailed Analysis
South Australian Department of Health and Ageing – November 2014
Inherent Limitations

This report has been prepared as outlined in the Introduction Section. The services provided in connection with this engagement comprise an advisory engagement which is not subject to Australian Auditing Standards or Australian Standards on Review or Assurance Engagements, and consequently no opinions or conclusions intended to convey assurance have been expressed.

The findings in this report are based on the studies and activities described and the reported results reflect the extent of the data provided, the stakeholders interviewed and the benchmarks available through public sources or KPMG networks. Any projection to wider issues or stakeholders is subject to the level of bias in the methods and available information.

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<td>Angio</td>
<td>Angiography</td>
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<tr>
<td>CAGR</td>
<td>Compound annual growth rate</td>
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<tr>
<td>CALHN</td>
<td>Central Adelaide Local Health Network</td>
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<tr>
<td>Cardio</td>
<td>Cardiology</td>
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<tr>
<td>CEO</td>
<td>Chief Executive Officer</td>
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<tr>
<td>Ceph</td>
<td>Cephalometric radiograph</td>
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<td>CHSA</td>
<td>Country Health SA</td>
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<tr>
<td>CMBS</td>
<td>Commonwealth Medicare Benefits Schedule</td>
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<tr>
<td>CT</td>
<td>Computed Tomography</td>
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<tr>
<td>DEXA</td>
<td>Dual-energy X-ray absorptiometry</td>
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<tr>
<td>DH</td>
<td>Department of Health and Ageing (SA)</td>
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<tr>
<td>EBA</td>
<td>Enterprise bargaining agreement</td>
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<tr>
<td>ED</td>
<td>Executive Director</td>
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<td>EMT</td>
<td>Executive Management Team</td>
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<tr>
<td>EPAS</td>
<td>Enterprise Patient Administration System</td>
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<td>ESMI</td>
<td>Enterprise System for Medical Imaging</td>
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<tr>
<td>Fluoro</td>
<td>Fluoroscopy</td>
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<td>FMC</td>
<td>Flinders Medical Centre</td>
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<tr>
<td>FTA</td>
<td>Fail to attend</td>
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<tr>
<td>FTE</td>
<td>Full time equivalent</td>
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<tr>
<td>FY</td>
<td>Financial year</td>
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<tr>
<td>GFS</td>
<td>Government Finance Statistic</td>
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<tr>
<td>GI</td>
<td>Gastrointestinal</td>
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<tr>
<td>GP</td>
<td>General practitioner</td>
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<tr>
<td>HR</td>
<td>Human Resources</td>
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<tr>
<td>ICT</td>
<td>Information and communication technology</td>
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<tr>
<td>IT</td>
<td>Information technology</td>
</tr>
<tr>
<td>KPI</td>
<td>Key performance indicator</td>
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<tr>
<td>LHN</td>
<td>Local Health Network</td>
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<tr>
<td>LMH</td>
<td>Lyell McEwin Hospital</td>
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<tr>
<td>Mammo</td>
<td>Mammography</td>
</tr>
<tr>
<td>MBH</td>
<td>Murray Bridge Hospital</td>
</tr>
<tr>
<td>MBS</td>
<td>Medicare Benefits Schedule</td>
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<tr>
<td>MRI</td>
<td>Magnetic Resonance Imaging</td>
</tr>
<tr>
<td>NALHN</td>
<td>Northern Adelaide Local Health Network</td>
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<tr>
<td>NHS</td>
<td>National Health Service (UK)</td>
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<tr>
<td>New RAH</td>
<td>New Royal Adelaide Hospital</td>
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<tr>
<td>NucMed</td>
<td>Nuclear Medicine</td>
</tr>
<tr>
<td>PACS</td>
<td>Picture Archive and Communication System</td>
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<tr>
<td>PC</td>
<td>Personal computer</td>
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</tbody>
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## Glossary of terms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tr>
<td>PICC</td>
<td>Peripherally inserted central catheter</td>
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<td>QLD</td>
<td>Queensland</td>
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<tr>
<td>RAH</td>
<td>Royal Adelaide Hospital</td>
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<td>RFP</td>
<td>Request for proposal</td>
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<td>RGH</td>
<td>Repatriation General Hospital</td>
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<tr>
<td>RIS</td>
<td>Radiology Information System</td>
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<tr>
<td>RoPP</td>
<td>Rights of Private Practice agreement</td>
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<tr>
<td>S&amp;W</td>
<td>Salary and wages</td>
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<tr>
<td>SA</td>
<td>South Australia</td>
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<tr>
<td>SALHN</td>
<td>Southern Adelaide Local Health Network</td>
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<tr>
<td>SAMI</td>
<td>South Australia Medical Imaging</td>
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<tr>
<td>SCSS</td>
<td>Statewide Clinical Support Services</td>
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<tr>
<td>SLA</td>
<td>Service Level Agreement</td>
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<td>SPF</td>
<td>Special Purpose Fund</td>
</tr>
<tr>
<td>TQEH</td>
<td>The Queen Elizabeth Hospital</td>
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<td>UK</td>
<td>United Kingdom</td>
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<td>US</td>
<td>United States</td>
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<tr>
<td>Vic</td>
<td>Victoria</td>
</tr>
<tr>
<td>VMO</td>
<td>Visiting Medical Officer</td>
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<tr>
<td>WCH</td>
<td>Women’s and Children’s Hospital</td>
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<td>YTD</td>
<td>Year to date</td>
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1. Introduction
Introduction

Review background

Background to the review

This review of South Australia Medical Imaging Services (SAMI) comes at a time when the South Australian health system is facing the challenge of delivering quality health care with constrained funds. This review is one of a number of similar reviews that have been undertaken of Local Health Networks (LHNs) across SA Health.

Sustainable health care in South Australia

As a part of providing sustainable health care, the Department of Health and Ageing is committed to delivering on the savings targets the Government has set for Health services. The 2013-14 Mid-Year Budget review re-profiled the savings requirements for SA Health with a requirement of $117m in 2013-14 increasing to approximately $151m in 2017-18, over the forward estimates.

The requirement and desire to deliver on the savings targets, while still meeting clinical and patient needs, has required SA Health to consider new opportunities to deliver services, and ensure greater value is generated from available funds.

Establishment of South Australia Medical Imaging

As part of the 2010 State Budget, the South Australian Government announced the consolidation of medical imaging services in order to improve service efficiency, cost savings and provide a more cohesive, consistent and accessible state-wide service. SA Health engaged an external consultant in 2010 to conduct a review of the existing service and to provide recommendations for the best solution to establish a consolidated state-wide service by July 2012.

The report made over 60 recommendations to deliver the shared service and an estimated $30m in efficiency benefits over three years. The recommendations focused on the governance structure of a state-wide service, service delivery, workflow, the workforce and organisation, assets, information technology (IT), Rights of Private Practice (RoPP) arrangements, financial processes and structures, and revenue opportunities.

After the release of SA Health’s response to the Review, South Australia Medical Imaging (SAMI) was established in July 2012. Under the service structure, SAMI is intended to manage the provision of all medical imaging services at SA public hospitals within metropolitan and country South Australia.

SAMI sits under the umbrella governance of the Statewide Clinical Support Services (SCSS), which also incorporates SA Pharmacy and SA Pathology.

Timeline of Medical Imaging Service reforms  2010 – 2014

- **2010**: Announcement of consolidation of imaging services to improve efficiency, cost savings and provide consistent services statewide
- **2011**: EY Review - Provided recommendations to establish a statewide imaging service and a number of savings strategies
- **1 Jul 2012**: SAMI implemented - Sits within SCSS
- **2012 onwards**: Budget and Remediation Reviews - SA Health has undertaken a number of reviews including of the LHNs.
- **2014**: SAMI Review - Review to assess the efficiency, effectiveness and financial performance of SA Medical Imaging services

1. Ernst & Young Review of South Australian Imaging
2. SA Health’s Response to the SA Imaging Review, May 2011
Introduction

Review background

Objectives of the review

The assessment of efficiency, effectiveness and financial performance of SAMI was asked to provide:

- a diagnostic type review of the status of current performance against benchmarking data, including the identification of current key barriers to efficiency, effectiveness and financial performance
- the development of a quantifiable, evidence based remedial solution design that includes the consideration of:
  - the implementation of the ESMI
  - the commissioning of the New Royal Adelaide Hospital
  - the progression of SA Health’s readiness to adopt the Activity Based Funding Framework
- the development of an attainable implementation plan that identifies:
  - the required business structure necessary to sustainably support the review’s recommendations
  - the organisation’s and workforce’s level of readiness to deliver recommended changes.¹

Review approach

The figure below presents KPMG’s approach to the review.

Phase 1: Project Initiation
- This phase achieved effective project kick-off by developing a shared understanding of the project scope, approach and governance.
- Through the SAMI Steering Committee the objective and strategic content for the review were explored. A list of stakeholders was finalised, and key documents and information were received.
- This phase concluded with the development of a project plan.

Phase 2: Data Analysis
- This phase produced the detailed and quantifiable evidence base used to understand the current performance and set the basis for designing improvement processes in the next phases.
- Key assessment areas were used which aligned with KPMG’s High Performing Healthcare framework. The key assessment areas were: service delivery, financial analysis and benchmarking of clinical and financial performance.
- Assessment areas were supported by data analysis and stakeholder consultation.

Phase 3: Solution Design
- The third phase identified a high level future state for SAMI services. The outputs and findings from the service delivery model review, financial analysis and benchmarking were used to undertake a gap analysis against this future state and evidence based solutions were developed.
- Improvement opportunities were developed to show potential benefits to productivity, quality, patient experience and revenue.
- A workshop was held with the SAMI EMT, Steering Committee and identified stakeholders to prioritise opportunities and develop a high level implementation plan.

Phase 4: Implementation Planning
- The phase involved the development of business cases and transitions plans for high and medium priority opportunities prioritised in the previous phase.
- Options for delivery were presented to the Steering Committee and relevant stakeholders for validation. Following this, a comprehensive business case was developed identifying the improvement opportunities.
- Individual implementation plans were developed for each option.

Phase 5: Reporting
- A draft report, incorporating an executive summary of the overall project and each of the service area findings and recommendations, was provided to the SAMI Steering Committee for a round of feedback before preparing this final report.
- The report details the results of the qualitative and quantitative benchmarking and data analysis which have underpinned the development of the business case and transition plans.

¹ – SA Health Scope and requirements, February 2014.
A number of activities were undertaken to inform the development of this report and the implementation plans. They are detailed in the table below.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>Further information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stakeholder meetings</td>
<td>A number of stakeholder meetings were held throughout the Review. These included with key SA Health staff, the private sector, ICT staff and Department Executives.</td>
<td></td>
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<tr>
<td>Local Health Network (LHN) Workshops</td>
<td>Each LHN was formally provided with two workshops. The first based on the ‘current state’ analysis to determine key issues and performance status. The second was used to identify areas for improvement and future focus areas. These workshops were held on site and conducted over 2 to 3 hours each.</td>
<td></td>
</tr>
<tr>
<td>Imaging Service Site Visits</td>
<td>Five detailed site visits were conducted. These visits consisted of interviews with each modality area, site operations, administration and clinical staff. They focused on understanding current service scope, performance and models of care. They were undertaken over 4 to 6 hours each.</td>
<td></td>
</tr>
<tr>
<td>Financial Analysis</td>
<td>A series of data requests were provided to SA Health, SAMI and SCSS. The data included:</td>
<td>Appendix 2</td>
</tr>
<tr>
<td></td>
<td>• Rights of Private Practice arrangements</td>
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<td></td>
<td>• Costing data from the National Hospital Cost Data Collection</td>
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<td></td>
<td>• Management reports and documentation</td>
<td></td>
</tr>
<tr>
<td>Activity Analysis</td>
<td>A series of data requests were provided by SA Health, SAMI and SCSS. The data included:</td>
<td>Appendix 2</td>
</tr>
<tr>
<td></td>
<td>• FTE data</td>
<td></td>
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<tr>
<td>Benchmarking</td>
<td>Based on the available data within SAMI a range of benchmarks were investigated for application and comparison. The benchmarks included: publicly available information, KPMG sourced data, grey literature scans, global available indicators and sample health service information sourced by KPMG.</td>
<td>Appendix 3</td>
</tr>
<tr>
<td>Document Review</td>
<td>Over 20 formal documents were provided for review, such as SAMI Reports, previous studies, briefing notes, business cases and other related information.</td>
<td></td>
</tr>
<tr>
<td>Steering Committee meetings</td>
<td>Fortnightly progress meetings were held throughout the Review. These meetings provided opportunity to update the Steering Committee on progress and to seek direction on key issues and opportunities.</td>
<td></td>
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</tbody>
</table>
Introduction

Purpose of this report
The purpose of this report is to provide:

• a comprehensive perspective on the key factors impacting on the efficiency, effectiveness and financial performance of SA Medical Imaging service
• a comprehensive perspective on the efficiency and effectiveness of the current business model and structure of SA Medical Imaging service
• a comprehensive and current view of the potential areas for improvement taking into account future Medical Imaging service delivery needs and the current budget environment for SA Health
• remedial recommendations, business cases and agreed realistic practical implementation plans to address the findings
• input into progressing SA Health’s organisational readiness for the Activity Based Funding Framework.¹

Limitations of the report
As identified throughout the Report, there were substantial data availability and quality challenges that were experienced throughout the course of the Review. The Report has, as far as possible, highlighted these issues and the approach to various analyses. Appendix 2 provides detail on the assumptions and calculation methods used through the Review.

Report structure
The report is structured on the following basis:

■ SAMI financial performance, efficiency and effectiveness (Chapter 2)
■ Improvement opportunities and Benefits Identification (Chapter 3)
■ Options for Implementation (Chapter 4)
■ Options Assessment (Chapter 5)
■ Preferred Option Implementation (Chapter 6)
■ Appendices

Throughout the analysis and illustrations, key points are highlighted and further description called out. These points are to provide linkages to the improvement areas and conclusions identified in Chapter 3.

This symbol is used to highlight specific data issues or limitations as described in the appendices.

¹ – Scope and requirements from SA Health RFP – SA Medical Imaging, February 2014.
2. SAMI financial performance, efficiency and effectiveness

Section content:
1. Achievements to date on the recommendations that led to SAMI’s establishment
2. Financial efficiency and effectiveness analysis
   1. Expenditure
   2. Revenue
   3. Workforce
   4. Modality analysis
   5. Activity and time analysis
   6. Structure, Governance & Quality and Safety
2.1 Progress to previous recommendations

The recommendations at the time of SAMI’s establishment have been partially completed – limited by available resources, delays in technology roll outs and a focus on core service delivery activities.

This review of South Australia Medical Imaging Services (SAMI) comes at a time when the South Australian health system is facing the challenge of delivering quality health care with constrained funds. This review is one of a number of similar reviews that have been undertaken of Local Health Networks (LHNs) across SA Health.

Establishment of SAMI

In late 2010, SA Health commissioned a consultancy to provide detail on efficiency initiatives (as indicated in the 2010 State Budget). In May 2011, SA Health produced a report detailing the agreed recommendations and activities that enabled the SAMI organisation to be established.

SA Health’s Response to SA Imaging Review (May 2011)

- Outlined the State’s response to the 2010 consultancy report
- Provided the implementation process and commitments to deliver on the agreed recommendations
- An assessment of achievements against each agreed recommendation is provided in Appendix 1.
2.1 Progress to previous recommendations

SAMI has made notable impact in the management and planning of capital investment.

What is working well

Throughout the review, a number of positive characteristics were described about the current state of services. Of most importance is the recognition that the delivery of clinical imaging services is of high quality and the respective clinical and management staff have high engagement with, and understanding of their services.

Other areas noted by stakeholders include:

- relationships at the clinical level are often strong and underpin the effective and high quality service delivery
- the centralisation of capital procurement processes is consistently identified as the best achievement of SAMI
- there are recent improvements in the extent of LHN and SAMI staff involvement in the budget build process, resulting in improved awareness of financial position and control
- the SAMI medical, allied health, nursing and administrative staff all demonstrated strong commitment to the delivery of high quality services to their patients and a desire to continue to improve in this area
- there is a wide range of service and good depth of expertise across SAMI including interventional radiology. This is well recognised and respected by hospital clinicians
- there is some use of decision support software, local protocols, audit and research and liaison with hospital doctors at a local level, that could be leveraged more across the state.
- group that effectively combines operational and clinical input, which has provided some structure to the delivery of services and improvement areas.
There are six elements that frame the ‘current state’ assessment of efficiency and effectiveness.

### Summary findings by each efficiency and effectiveness element

<table>
<thead>
<tr>
<th>Element</th>
<th>Summary findings</th>
</tr>
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</table>
| **Expenditure**              | There are a number of cost differences between sites that provide an opportunity for improvement. The most material include:  
  - Salaries & wages  
  - Overtime & agency staffing  
  - Medical & laboratory supplies  
  - Prosthetic costs. |
| **Revenue**                  | Private revenue has grown significantly over the past three years. There is variation in:  
  - The administration charges for private practice support  
  - The utilisation and operating hours of equipment (that with improvement could yield additional revenue) |
| **Workforce**                | There are significant barriers to improving consistency that could be overcome by the implementation of a transparent activity based funding model, and a single private practice arrangement across the state.  
  - There is limited strategic workforce planning and some potential for changing the roles and functions of Radiographers and Nursing staff.  
  - SA has the highest availability of Radiologist and Radiographer workforce in Australia per head of population, indicating potential for additional workforce supply.  
  - There is opportunity to optimise the number of Administration staff. |
| **Modality**                 | SA has equitable availability of licensed MRIs provided in public services per head of population in Australia.  
  - There is a generally comparable rate of modality activity, except for Ultrasound, whose activity seems to be high in comparison to available data from Qld and the NHS and is worthy of further clinical review. |
| **Activity**                 | Total activity remains stable, however the increasing demand from inpatient and emergency cases has resulted in a decrease in outpatient throughput – with a resultant impact and potential risk to revenue. This indicates either a capacity issue and/or an unintended consequence of prioritisation systems, or a lack of outpatient referrals post inpatient visits. |
| **Structure, Governance, Safety & Quality** | The lack of clear service agreements between SAMI and LHNs has led to concerns about accountabilities and poor satisfaction and understanding of performance expectations. With limited resources available, quality and safety improvements have been focused at an individual site level and so there is potential duplication of effort. |

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2.2 Summary of efficiency and effectiveness

The high level efficiency drivers over the past 3 years show an increase in non-labour expenditure, stable total activity with increasing inpatient and emergency demand impacting outpatient throughput.

Employee costs have generally risen in line with EBA and inflation factors.

Of note is the rise in the non-labour (variable) costs with little increase in total activity.

Activity is flat (as is general hospital activity across the state), however there is an increasing trend in inpatient and emergency activity that has led to a reduction in outpatient throughput.

Revenue results have improved, however it is difficult to assess how much of this result is due to improvement in reporting and accounting practice versus real revenue increases.

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Trends in the high level drivers of efficiency and effectiveness  (FY12 to FY14)

<table>
<thead>
<tr>
<th>Expenditure</th>
<th>Activity</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenditure increased by 9.4%</td>
<td>Base activity has decreased by 0.4%</td>
<td>Revenue increased by 27%</td>
</tr>
</tbody>
</table>

- Employee benefits costs 6%
- Supplies & services 16%
- Mobile 17%
- MRI 6%
- Mammo 12%
- Nuclear Medicine 2%
- Inpatient activity 0.5%
- Emergency activity 3.2%
- Outpatient activity -4.8%
- LHM 4.0%
- FMC 3.7%
- RAH 4.3%
- RGH 5.7%
- Fees & charges 26%
- Other revenue 63%

When using total dollars throughout the analysis, available data on Country Health sites is included. However when comparing specific sites activity and dollars these figures are not fully available and so are excluded.

Two levels of activity are provided throughout the Report.

1 – unweighted activity: this is raw activity as reported through the various site information systems. There are notable counting issues between sites as described in the Appendices.

2 – weighted activity: there are limited relative value measures to standardise imaging activity. Based on expert opinion and agreed with SAMI, the CMBS was used as a proxy to weight activity.
2.3 Expenditure analysis

SAMI’s expenditure in FY 14 is forecast to be $115m, growing on average 4.6% per year. This is slower than the rate of Health CPI (6.4%)\(^1\).

**Performance**

Overall expenditure has increased by 9.2% (2012-14), the largest increases were at RAH and WCH, which have increased 22.5% and 12.6% respectively.

Monitoring financial performance within SAMI has been challenging due to the differences in how revenue and expenditure ‘flow’ between SAMI, the LHNs and SA Health. Two sites (RAH and LMH) charge other departments within the same hospital for medical imaging services delivered. While there are specific line items which are flagged as recharges, the process makes it difficult to accurately understand the costs involved in delivering imaging services.

**Reporting & management**

The management reporting of expenditure is currently provided by SCSS on a monthly basis and discussed at the SAMI Executive Management Team (EMT). LHN management are not currently provided with expenditure information and have limited visibility of medical imaging activity or KPIs.

In regards to financial controls and governance, some stakeholders reported that LHNs do not understand that SAMI is separate to the LHNs, and, as a result, there are often costs which SAMI account for which are actually LHN specific costs (and vice versa). This is supported in the detailed journals and general ledger accounts where, for example, some maintenance costs at LHNs are coded to SAMI cost centres, requiring re-allocation and processing.

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1. The Health CPI figure was used as a high level indicator as figure from SA Health were unavailable. The figure is based on those published in the ABS CPI data from collection 6401.0 – June 2014.
Cost increases can arise from normal cost inflation (e.g., base wages), volume and growth in various drivers (such as agency use, overtime or consumables). Illustrated below are the eight major expense categories and their relevant drivers. Each category and, where possible, cost driver, has been analysed and detail provided in the following pages and appendices as indicated.

### 2.3 Expenditure analysis

Expenditure is driven largely by base salaries & wages (68% of total). Medical Supplies (13%) and Drugs (~5%) are the most material costs that change with activity.

<table>
<thead>
<tr>
<th>Page</th>
<th>Major expense category</th>
<th>Cost drivers</th>
<th>Other observations</th>
</tr>
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<tbody>
<tr>
<td>18, 99</td>
<td>Base Salaries &amp; Wages</td>
<td>Wage rate (and indexation)</td>
<td>• The current reporting and management processes are centred on the site management level rather than LHN level and service level agreements are not in place for all LHNs (WCH is the only site with a formal SLA in place). This makes it difficult for LHNs to assess performance against agreed KPIs and costs.</td>
</tr>
<tr>
<td>App.3</td>
<td>Other Salaries &amp; Wages (Overtime, Sick leave etc)</td>
<td>Amounts of overtime/sick leave expense</td>
<td>• There is a prototype activity based costing approach being trialled at RGH, which provides an example of the use for product/modality level costing information – this could be potentially used to develop a funding model.</td>
</tr>
<tr>
<td>18</td>
<td>Agency</td>
<td>Contractor rate, Utilisation of contractors, Contract price</td>
<td></td>
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<td>18</td>
<td>Repair &amp; Maintenance</td>
<td>Equipment maintenance schedule, Equipment age</td>
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<td>18, App.3</td>
<td>Drug supplies</td>
<td>Drug cost per unit of activity, Drug volume</td>
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<td>18</td>
<td>Other Imaging Supplies</td>
<td>Supply cost per unit of activity, Supply volume and sub-category</td>
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<td>18, App.3</td>
<td>Prosthetics</td>
<td>Prosthetic expense per unit of activity</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Other</td>
<td>Other supply expense per unit of activity</td>
<td></td>
</tr>
</tbody>
</table>
2.3 Expenditure – cost per weighted exam analysis

Analyses of expenditure per weighted activity unit shows most sites operate within the SAMI state-wide average—the exception is WCH given some paediatric service requirements.

### Average total cost per weighted test (2013 & 14)

The average total cost per weighted test is used as a measure of efficiency. Notwithstanding its drawbacks, weighting activity provides a means by which sites can be more readily compared.

Comparing the average unit cost of activity by site reveals:

- LMH is 34% lower than the SAMI average cost per weighted test.
- WCH is 43% higher than the SAMI average cost per weighted test.

There are multiple reasons for these results, such as the mix of activity performed, the local workforce model and resources consumed. Some of these factors are reasonable, while some indicate areas for potential improvement, which are explored in the following pages.

### Average S&W cost per weighted test (2013 & 14)

Average salaries and wages cost per weighted test grew by 6% between 2013 and 2014, with most sites operating within a close distribution and therefore within a reasonable spread to the SAMI average. The exceptions to this were RGH and WCH.

A significant proportion of paediatric patients require anaesthetics which increase staffing costs and reduce throughput. Despite this, there may opportunities to improve throughput in other modalities (such as CT).
2.3 Expenditure – cost per weighted exam detailed analysis

Analyses of expenditure per weighted activity unit shows significant local variation in key cost drivers including base S&W, agency, overtime and prostheses.

As discussed in the previous slide, most sites are similar in their S&W costs per weighted activity unit, with the exceptions of RGH, LMH and WCH. The graph below provides deeper detail on the sub-elements of S&W per weighted activity unit.

The graph demonstrates the different workforce models among sites. While this may be directly influenced by local service provision (e.g. heavy reliance on Radiographers at WCH), there are opportunities to improve consistency in staffing models in other categories.

For example, FMC have base S&W Nursing costs of $6.82 per activity unit, compared with the SAMI average of $10.61. This opportunity is further described on page 34.

While S&W comprise the majority of costs (68%), there are a number of other cost categories that impact on the average cost per weighted activity unit. Some of these costs relate directly to service mix, patient care and volume fluctuations (e.g. prostheses and implants costs at RAH relate directly to the service mix offered). Other costs, such as agency staffing and overtime, can be an indicator of the effectiveness and efficiency of service delivery, and these costs show considerable variation at the site level.

Based on this analysis of non labour costs, there are opportunities to look for individual savings by:

- considering a workforce model that decreases reliance on agency staffing (especially at RAH) and that allows flexibility across sites that have high proportions of overtime/call backs
- Better managing high cost/variable items, such as prosthetics and implants.

### Base S&W cost per weighted activity unit, by site, 2013

<table>
<thead>
<tr>
<th>Site</th>
<th>Inter Health</th>
<th>Other</th>
<th>Weekly Paid</th>
<th>Salaried Employees</th>
<th>Nursing</th>
<th>Medical Officers</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAH</td>
<td>3.60</td>
<td>8.38</td>
<td>0.01</td>
<td>49.16</td>
<td>12.01</td>
<td>28.21</td>
</tr>
<tr>
<td>TQEH</td>
<td>0.82</td>
<td>9.64</td>
<td>0.00</td>
<td>50.81</td>
<td>12.76</td>
<td>37.58</td>
</tr>
<tr>
<td>FMC</td>
<td>3.35</td>
<td>9.93</td>
<td>0.00</td>
<td>53.45</td>
<td>6.82</td>
<td>38.70</td>
</tr>
<tr>
<td>RGH</td>
<td>0.00</td>
<td>9.39</td>
<td>0.01</td>
<td>73.89</td>
<td>14.31</td>
<td>22.67</td>
</tr>
<tr>
<td>LMH</td>
<td>1.99</td>
<td>12.15</td>
<td>0.05</td>
<td>46.24</td>
<td>6.92</td>
<td>22.12</td>
</tr>
<tr>
<td>WCH</td>
<td>2.52</td>
<td>15.44</td>
<td>0.00</td>
<td>99.60</td>
<td>18.07</td>
<td>49.45</td>
</tr>
</tbody>
</table>

### Variable cost per weighted activity unit, by site, 2013

<table>
<thead>
<tr>
<th>Site</th>
<th>Other</th>
<th>Overtime</th>
<th>Agency Staffing</th>
<th>Repairs and Maintenance</th>
<th>Other supplies and services</th>
<th>Medical &amp; Laboratory Supplies</th>
<th>Prosthetics and implants</th>
<th>Drug Supplies</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAH</td>
<td>0.87</td>
<td>11.44</td>
<td>3.56</td>
<td>13.68</td>
<td>5.14</td>
<td>24.45</td>
<td>11.73</td>
<td>0.55</td>
</tr>
<tr>
<td>TQEH</td>
<td>3.53</td>
<td>7.47</td>
<td>0.36</td>
<td>13.32</td>
<td>5.68</td>
<td>14.41</td>
<td>3.17</td>
<td>2.28</td>
</tr>
<tr>
<td>FMC</td>
<td>3.16</td>
<td>8.49</td>
<td>0.03</td>
<td>7.01</td>
<td>4.46</td>
<td>12.03</td>
<td>1.31</td>
<td>0.48</td>
</tr>
<tr>
<td>RGH</td>
<td>1.86</td>
<td>5.76</td>
<td>0.01</td>
<td>0.46</td>
<td>4.94</td>
<td>17.30</td>
<td>1.11</td>
<td>1.98</td>
</tr>
<tr>
<td>LMH</td>
<td>0.95</td>
<td>13.39</td>
<td>0.02</td>
<td>11.70</td>
<td>0.76</td>
<td>5.94</td>
<td>0.06</td>
<td>1.71</td>
</tr>
<tr>
<td>WCH</td>
<td>1.17</td>
<td>11.02</td>
<td>0.01</td>
<td>19.65</td>
<td>11.09</td>
<td>15.65</td>
<td>0.01</td>
<td>1.84</td>
</tr>
</tbody>
</table>
SAMI performs generally within the range of available cost per exam benchmarks. There are variances at RAH and WCH that indicate areas for improvement.

There are outliers at:
- RAH due to high prostheses and implants costs
- TQEH due to S&W, and other consumables costs.

SAMI’s performance against average S&W cost falls within public benchmarks, with the exception of WCH. This is related, in part, to the limited availability of paediatric hospital benchmarks.

Public benchmarks were calculated using the 25th and 75th percentile respectively from both publicly available and KPMG data analysis. Further information provided in Appendix 2.

There are inherent difficulties in comparing unweighted units of activity, because differences in service provision and access directly impact the unit cost. In future, site level data collection needs to occur, using a bottom up costing approach. This will provide transparent data to management on site variation.
2.3 Expenditure – activity based costing example

There is early work underway that provides a potential prototype for improvements in activity based costing information.

To support greater insight into cost management and variation, costing reports need to be prepared at the individual site level and by modality/product type. Work is currently underway by SCSS to prepare costing reports for each site, with RGH as the pilot site (detailed in the table below). This data was not available for other sites at the time of this review, however is a substantial improvement and should be continued.

Using a bottom-up clinical costing approach, it is possible to identify the cost of delivery services. For both clinicians and management, this provides valuable information on the efficient and effective delivery of services. Combining this at a whole of site level provides a basis for decisions regarding service mix and can be used to inform future costs and revenue models based on activity.

This information provides a good start in developing modality/product based costs that could further support KPI and performance tools for use with LHNs, as well as providing the basis for an activity based funding model.

### Activity based costing data – pilot from RGH

<table>
<thead>
<tr>
<th>Service line</th>
<th>Discipline</th>
<th>FTE</th>
<th>Direct cost</th>
<th>Corporate overhead</th>
<th>Site overhead</th>
<th>Total cost</th>
<th>%</th>
<th>Activity</th>
<th>Average cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Committee</td>
<td>Committees-RGH</td>
<td>0.25</td>
<td>33,053</td>
<td>539</td>
<td>4,588</td>
<td>38,181</td>
<td>0.78%</td>
<td>399</td>
<td>1,058.89</td>
</tr>
<tr>
<td>Imaging</td>
<td>Angio/Interventional</td>
<td>2.39</td>
<td>373,513</td>
<td>5,154</td>
<td>43,829</td>
<td>422,496</td>
<td>8.60%</td>
<td>399</td>
<td>158.22</td>
</tr>
<tr>
<td>Imaging</td>
<td>CT</td>
<td>5.49</td>
<td>883,322</td>
<td>11,839</td>
<td>100,670</td>
<td>995,833</td>
<td>20.27%</td>
<td>6,294</td>
<td>158.22</td>
</tr>
<tr>
<td>Imaging</td>
<td>Fluroscopy</td>
<td>1.85</td>
<td>243,396</td>
<td>3,960</td>
<td>33,679</td>
<td>281,036</td>
<td>5.72%</td>
<td>2,574</td>
<td>77.21</td>
</tr>
<tr>
<td>Imaging</td>
<td>General X-Ray</td>
<td>7.33</td>
<td>1,061,881</td>
<td>15,811</td>
<td>134,442</td>
<td>1,212,134</td>
<td>24.67%</td>
<td>13,387</td>
<td>90.55</td>
</tr>
<tr>
<td>Imaging</td>
<td>Mobiles and Theatre</td>
<td>1.17</td>
<td>174,840</td>
<td>2,514</td>
<td>21,382</td>
<td>198,737</td>
<td>4.05%</td>
<td>2,574</td>
<td>77.21</td>
</tr>
<tr>
<td>Imaging</td>
<td>Ultrasound</td>
<td>9.12</td>
<td>1,306,348</td>
<td>19,683</td>
<td>167,368</td>
<td>1,493,401</td>
<td>30.40%</td>
<td>11,586</td>
<td>128.90</td>
</tr>
<tr>
<td>MDT</td>
<td>MDT</td>
<td>0.07</td>
<td>25,613</td>
<td>140</td>
<td>1,193</td>
<td>26,946</td>
<td>0.55%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research</td>
<td>Research</td>
<td>0.20</td>
<td>22,009</td>
<td>431</td>
<td>3,670</td>
<td>26,111</td>
<td>0.53%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training</td>
<td>Teaching</td>
<td>0.97</td>
<td>197,823</td>
<td>2,082</td>
<td>17,711</td>
<td>217,617</td>
<td>4.43%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>28.797</strong></td>
<td><strong>4,321,802</strong></td>
<td><strong>62,159</strong></td>
<td><strong>528,536</strong></td>
<td><strong>4,912,497</strong></td>
<td><strong>100.00%</strong></td>
<td><strong>34,240</strong></td>
<td><strong>143.47</strong></td>
</tr>
</tbody>
</table>

Source: SA Health
2.3 Expenditure – analysis to a proxy ‘efficient cost’

SAMI’s costs equate to 126% of CMBS. Notwithstanding the high level analysis, this would indicate room for improvement when compared to industry knowledge and private sector performance.

In order to compare the total cost of SAMI, an ‘efficient cost’ indicator needed to be derived. Due to a range of data and comparability factors, detailed analysis was not possible and so a proxy was agreed on the basis that: revenue should equal expenditure. This premise underlies national ABF pricing where the national efficient price is derived from costing data, before various factors such as geography, compensable status are removed/included.

The CMBS rate was used on 2013-14 activity to calculate a ‘deemed revenue’ figure as a proxy for efficient cost. This was then compared to actual SAMI expenditure in FY14. While indicative only, together with industry knowledge, the rate of performance relative to the CMBS suggests that there is opportunity for improvement could be reduced in the order of 5-10%.

From this high level comparison, there would seem to be room for improvement in the cost base of SAMI.

Previous advice to SA Health has indicated that the rate for services from private providers would range from 40% to 60% of CMBS rates.

KPMG experience suggests that such a range could only be possible for a limited service scope such as specialist services, and that a range of between 90% and 130% of CMBS is more likely to be achievable for a more complete scope of service delivery (for eg: teaching, quality management and clinical governance functions).

SAMI total costs (FY 14)

- Expenditure for all activity
- Some overhead costs, but not all eg: utility expenses at sites

Includes:

$114,882,269

Modelled expenditure using 100% Medicare Benefits Schedule rate*

- Provides a benchmark price (and a proxy for cost) per unit activity

Includes:

$90,782,340

How does this compare?

Direct comparison on these figures is difficult. Industry sources indicate that a range of 90% (for lower acuity/limited casemix) to 130% (tertiary services) would be expected for a fully outsourced public imaging department.
2.4 Revenue – summary

SAMI’s revenue from non-Government sources is forecast to near $19.7m. Analysis of changes in revenue over time are imprecise due to the treatment of private income and historical accounting practices.

**Revenue Sources**

SAMI operating revenue is sourced through five major categories:

- Fees and charges ($19.4m)
- Grants and subsidies income ($0.2m)
- Investment revenue ($0.06m)
- Other revenue ($0.02m)
- SA Health activity funding: within the state price and budgets to LHNs there is a component for Imaging services.

There is significant variation in revenue generation at the site level. There are outliers at:

- RAH and WCH: This is linked to RoPP revenue not being recognised in SAMI financial reporting, but in SA Health accounts.
- FMC: The increase in revenue between 2012 and 2014 financial years is related to a 22% increase in Fees and Charges revenue, specifically, RoPP revenue.
Revenue collected through private practice has improved significantly, however there is a need to develop a state wide funding model and to address arrangements between sites and specialist providers.

The business rules and reconciliation of revenue for SAMI have been developing in recent times as SCSS finance staff have capacity to address accounting practices. Historically private income and special purpose revenue has been accounted for within LHNs, and in some instances is still the case. It is difficult to get an accurate picture of SAMI private practice revenue, due to a number of factors:

- Using SAMI general ledger data, between 2012/13 and 2013/14 (prorated), RoPP revenue distributions increased by 18%. However, using SA Health billing data, total RoPP billing revenue decreased by 0.6% between 2012/13 and 2013/14. Differences may relate to the method for prorating 2013/14 financial data, and the fact that RAH and WCH RoPP revenue does not flow through the SAMI general ledger.
- Despite the above limitations, there was significant growth between 2011/12 and 2012/13, with RoPP revenue growing by $1.8m (20%). A continued focus on embedding a consistent, state-wide private practice arrangement, and improving accounting practices, will support increased private practice revenue into the future.

There is notable variation in revenue within:

- RoPP revenue: RAH RoPP revenue does not flow through SAMI financial reporting.

As described in Appendix 2 there are significant limitations on revenue data availability or reliability. Detailed analyses on the related revenue drivers have been provided where possible.

<table>
<thead>
<tr>
<th>Revenue drivers</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price per activity unit</td>
<td>87</td>
</tr>
<tr>
<td>Rights of Private Practice schemes</td>
<td>25, App.3</td>
</tr>
<tr>
<td>Administration Charges</td>
<td>App. 3</td>
</tr>
<tr>
<td>Special Purpose Fund rules</td>
<td>App. 3</td>
</tr>
<tr>
<td>Referral channels</td>
<td></td>
</tr>
<tr>
<td>Activity by setting (inpatient / outpatient / ED)</td>
<td>33</td>
</tr>
<tr>
<td>Licensed machine utilisation</td>
<td>31</td>
</tr>
<tr>
<td>Hours of operation</td>
<td>104</td>
</tr>
</tbody>
</table>
2.4 Revenue – price per activity unit

SAMI services are not subject to a transparent activity based funding model. Providing a pricing mechanism for services will encourage greater management of costs and volumes at site level.

Revenue reporting

The initial development of the SAMI budget was based on historical allocations with little analysis of actual funding requirements (costs) or liaison with LHNs. Currently, while the overall state service can be monitored, the accounting for full revenue in SAMI and at site level is limited.

As illustrated below, when analysing surplus and deficit, there is a significant gap between the revenue and expenditure accounts. In assuming SAMI is a break-even entity, Government funding (SAMI revenue) would therefore total $54.1m.

Because of the above, there is no avenue to conduct meaningful surplus and deficit analysis and, because of the historical basis of expenditure budgets, there is no funding model for imaging services.

In the absence of such revenue and expenditure analysis, sites are unable to effectively report to LHNs on the costs of service and LHNs have no financial indicators that would provide signals for managing cost or volume.

2012/13 - Financial Summary

This is an assumed revenue item, based on SAMI running at a cost = revenue (not for profit) agency. Based on SAMI’s existing financial accounting within CALHN, it is assumed that this revenue is flowing through CALHN or LHNs more generally as part of their ABF budgets.

Notes:
A – Analysis used 2012/13 financial as it was the only year in which full year actuals were available.
B – Capital Revenue includes ‘disposal of assets’.
2.4 Revenue – non Government sources (RoPP)

Compensable revenue is acquired through agreements with specialist staff. There is variation in these arrangements, resulting in variable distributions to SAMI and LHNs.

RoPP revenue by site is illustrated to the right, as reported in SAMI accounts.

RAH RoPP revenue does not flow through SAMI financial accounts, despite being revenue being generated by SAMI clinicians. WCH RoPP revenue is coded as Patient client fees in SAMI GL data.

While a review was recently undertaken to realign SPF to fall within SAMI financials based on agreed business rules, further work is required to embed this.

Based on SAMI GL data:
- RoPP revenue increased by $1.8m (16%) between 2012/13 and 2013/14 (prorated).

Based on SA Health billing data:*  
- Total RoPP receipts decreased 1% ($224k) between 2012/13 and 2013/14, with significant variation between sites.
- LMH increased by 10%, while RAH and WCH revenue decreased by 11% and 12% respectively.

*See Appendix for detailed tables.

In the absence of a single state-wide rights of private practice arrangement, there are differences in how revenue is distributed. The impact of this has been:
- Lack of transparency in how RoPP revenue is utilised (based on where revenue is distributed)
- Lack of clarity in whether the administration fee paid by the specialists as part of RoPP agreements for the use of facilities and other services reflect the real value of public resources being used. Further, there are differences in amounts of administration and indemnity fees received by sites. For example, LMH received 16% towards admin/indemnity fees which was above other sites, which have remained flat at 9 per cent over the two years.
- While capping the amount of revenue may limit the revenue a specialist can receive annually, it may also act as a disincentive for the specialist to generate additional receipts.

[Graph showing RoPP billings by financial year and site]
2.5 Workforce – summary

There are many differences in the workforce profiles at SAMI sites, with significant opportunity to improve consistency and equity in the deployment of professional staff.

The drivers of workforce change are the profession group, hours worked and hours of operation/demand needs. The available workforce information has been analysed to assess the impact of these drivers and provide comparisons by site.

Findings

Nursing FTE has increased by over 11% in the past 3 years across all sites. The greatest increase at LMH was due to the approval of a service improvement business case, reflective of an increase in demand. It is notable that this workforce group is not included under SAMI's management control.

While administration FTE has reduced over the period, this is offset by the implementation of SAMI which has contributed approximately 5-7 FTE over this time period.

Medical FTE has increased but not as significantly as the nursing FTE.

Workforce by profession (FTE) and % changes 2012 - 2014

<table>
<thead>
<tr>
<th>Year</th>
<th>Admin</th>
<th>Medical</th>
<th>Nursing</th>
<th>Professionals</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012 - FTE</td>
<td>138</td>
<td>101</td>
<td>86</td>
<td>313</td>
</tr>
<tr>
<td>2013 - FTE</td>
<td>137</td>
<td>102</td>
<td>89</td>
<td>307</td>
</tr>
<tr>
<td>2014 - FTE</td>
<td>136</td>
<td>106</td>
<td>96</td>
<td>314</td>
</tr>
</tbody>
</table>

Workforce FTE by profession by site (2014)

- RAH: 36
- Medical: 39
- Nursing: 36
- Professionals: 80

- TOEH: 18
- FMC: 30
- RGH: 11
- LMH: 13
- WCH: 13

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2.5 Workforce – professional supply/availability

Compared to the rest of Australia, SA has above average access to Radiologists and Radiographers.

Workforce by profession per 100,000 people

For both Medical (Radiologist) and Professional Staff (Radiographer and associated staff) it appears that SA has the higher proportion of imaging staff per population, when measured against the overall and average of Australian data.

This highlights that SA may have additional workforce capacity and opportunity for role substitution as an area for potential future analysis, particularly in regards to the allied health professionals where SA is above the Australian average by 29 per cent.

Workforce % FTE by profession by site (2014)

This chart highlights the variable nature of the workforce model at each hospital, of course the complexity of the clinical practice would have a direct impact on the workforce model. However there is some scope for further analysis around the ideal workforce mix for SAMI hospitals.

Potential opportunities:

- High admin percentage at RGH
- Low percentage of nursing at FMC
- High professional percentage at LMH
2.5 Workforce – nursing staff model opportunities

Flinders Medical Centre could provide a good benchmark for the efficient use of Nursing staff

Nursing workforce FTE by site, changes 2012-2014

The nursing FTE highlights the variability of staffing at various sites based on the complexity of activity undertaken at the respective hospital. The SAMI hospitals at the higher end of the range are also above the respective peer hospitals particularly RAH and TQEH, the outlier in this analysis is FMC. With the high medical FTE percentage it would be reasonable to expect that the nursing ratio would be similar to the RAH or TQEH. Given its significant difference this workforce mix could be reviewed as part of a series of standardisation improvements or changes to workforce scope/role.

Nursing expense per weighted activity (2013 & 14)

Again FMC is well below on this measure and the SAMI average. It is interesting to note that once the activity is weighted this has a large impact on WCH, this is due to the nature of the work (less complex but time intensive) and also any complex work often takes longer due to the nature of treating children, particularly MRI and CT.
2.5 Workforce – role reforms

Workforce planning is limited across SAMI, however there are innovative examples that should be considered.

Role expansion is a rapid area of change across the Australian health system currently. A range of position statements, literature reviews and policy directions support increased roles for non-medical professions.

Both Australia and the UK have moved towards a tiered approach for radiography skill levels e.g. accredited, advanced and consultant practitioners.

The impact on staff retention and job satisfaction, as well as improvements to efficiency and making the best use of the clinical experience available are important for SAMI to consider into the future.

<table>
<thead>
<tr>
<th>Workforce Initiative</th>
<th>Examples</th>
<th>Examples</th>
<th>Implications for SAMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiographer Assistants</td>
<td>Perform duties such as processing film images, assisting in maintaining agreed stock levels of consumable items, preparing and assisting with general and specialised procedures including biopsies, ensuring a clean and hygienic working environment, preparing patients for treatment, being involved in the manual handling of patients, recognising equipment faults and reporting these immediately undertaking basic maintenance of equipment.</td>
<td>UK, US, AUS, other European countries</td>
<td>Achievable and will release radiographers to focus on more specialised input.</td>
</tr>
<tr>
<td>Radiographer Extended Roles</td>
<td>Venepuncture and administration of IV contrast for CT and MRI</td>
<td>AUS</td>
<td>All achievable, depending on level of change desired, and governance processes to support these initiatives. Radiographer administration of IV contrast and MRI protocolling are widespread in other Australian units and are recommended as the first areas for implementation.</td>
</tr>
<tr>
<td></td>
<td>Request imaging on protocol eg clearance of orbits prior to MRI</td>
<td>AUS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Report on certain plain films and x-rays</td>
<td>UK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conduct procedures – barium enema, fluoroscopy of GI tract</td>
<td>UK</td>
<td></td>
</tr>
<tr>
<td>Other Professionals</td>
<td>Insertion of PICC lines</td>
<td>AUS (Vic – nurse led), UK</td>
<td>Consider implementation of nurse-led state-wide PICC service, sitting outside of SAMI</td>
</tr>
</tbody>
</table>

Case Study: Stockport Foundation NHS Trust

This NHS Trust has used benchmarking and service improvement to implement a range of extended roles including:
- nursing and radiographer led ultrasound (soft tissue, neck, testes), CT brain reporting, musculoskeletal x-ray reporting (ED and GPs) and advanced GI imaging
- mammographic staff to undertake stereotactic breast biopsy
- advanced nurse practitioner undertaking hystero-salpingograms
- radiographer-led reporting of DEXA
- myocardial perfusion Imaging service in which the stressing agents are administered by nursing staff.
2.6 Modality analysis
There is a general trend for increasing activity in most modalities. This is reflective of clinical practice across Australia and globally.

- Increase at LMH in line with other activity and notable ultrasound increase.
- Notable decrease in RGH activity and opportunity to utilise staff across the system with remote reading capability.
- Mammography activity is increasing off a low base
- Decrease in general x-ray is in line with general trend in imaging technology and clinical usage.

Average annual imaging growth in Australia 2006-2011

% change in unweighted activity by LHN 2012-14

Change in weighted activity by modality 2012-14

Source: National Prescribing Service 2006-2001
2.6 Modality access

SA has similar access to Medicare eligible MRI services to that of other States, and has comparable access to machines located within public health services.

MBS eligible machines by state

- SA compares well with 1.32 per 100,000 people
- Any future opportunity to add MRI machines, particularly in country areas, should consider the potential revenue requirements and competition from private providers.

Public MRI machines by state

- SA compares well on a per 100,000 people basis in the public system.

The number of licensed MRI machines located within public hospitals or health services would seem to be adequate on a per 100,000 population basis.

Based on this assessment, it may be necessary to investigate the location and availability/utilisation of these machines before making application for additional licenses.

Together with the availability of unlicensed machines, SA’s access to MRI would seem to be meeting the needs of the population – at a comparative level.

Source: the Department of Health (Commonwealth), MRI Units, July 2014.
On a per 1,000 population basis, SA has less activity compared to Qld for CT and MRI. SA seems to have more Ultrasound activity compared to Qld and NHS data.

The figure below provides the rate of activity for CT, MRI and Ultrasound per 1,000 population for South Australia, Queensland, and the NHS. Variation can be due to a number of factors, including:

- Differences in units of measurement and inconsistencies in coding (it is difficult to include/exclude obstetric activity)
- Clinical application of testing – variation in both referral and appropriateness of test requests. This leads to a potential clinical impact of under-testing versus the lack of utility and avoidable cost of over-testing
- Organisation design for imaging services
- Service access
- Profile and productivity of the workforce.

Unwanted variation requires clinicians and service providers to work together to:

- Use evidence-based patient pathways
- Monitor referrals and test requests to identify both under-use and over-use of exams.

Exams per 1,000 population, by modality and jurisdiction, 2011/12

Notwithstanding the potentially valid reasons – most likely the anecdotal increase of U/S in obstetric care - SA’s activity in Ultrasound would suggest a need for further clinical analysis.

2.7 Activity analysis

Activity has remained relatively stable over the past three years, with minor increases in inpatient complexity and emergency activity offset by reductions in outpatient volume.

Findings

Over time there has been slight increase in demand for emergency and inpatient services that has reduced the capacity to deliver outpatient procedures. If this trend were to continue, SAMI must strategically determine its plans for managing outpatient demand as the impacts on revenue could be significant.

Inpatient

- LMH has had a 16% increase over the 3 years
- RGH has had a 22% reduction.

Outpatient

- RAH has decreased by 22% and TQEH by 4%

Emergency

- Has increased by 19% at FMC and reduced by 12% at TQEH

The decrease in outpatient activity should be subject to regular monitoring and reporting.

LHNs should be engaged in discussions that utilise information on activity, cost and revenue so that they can contribute to decisions about prioritisation and service availability.
The majority of activity occurs through the standard working hours of 0800 – 1800, Monday to Friday. 80% of activity takes place between 8am and 6pm. This reflects the largely planned nature of the workload, and the relatively limited use of evenings and weekends to meet outpatient demand.

The middle of the day drop in activity is most likely due to meal breaks and non-patient time.

RAH has more evening activity, largely due to its emergency profile, however this should be reviewed for more detailed workflow and demand management strategies.

A focus on reducing overtime at some sites has led to a reduction in activity at the end of the rostered day, resulting in some unused capacity – indicating a need to examine rostering flexibility or opportunities for cross site flexibility.
2.7 Activity – time from referral to exam

Time data from referral to exam is poorly and inconsistently recorded across sites. Waiting times for MRI for outpatients appear to be the longest of the modalities.

Findings

- Despite the data issues, outpatient waiting times should be reviewed because the relatively longer waiting time should be less impacted by recording delays, than other referral sources.
- Outpatient waiting times are longest for CT, MRI, ultrasound and mammography, and longest by site at RAH.
- Benchmarking data for five other hospitals across two health services identified that they have similar issues with referral receipt time data quality and do not use this as a reliable measure. Comparison with a major private hospital shows, as would be expected, significantly shorter waiting times.
- SAMI stakeholder input identified a range of factors influencing outpatient access, including prioritisation of inpatient and emergency work, high FTAs in some modalities and the productivity of certain rooms/machines/staff in some modalities/sites.
- It appears that, while SAMI has prioritised meeting inpatient and emergency activity, which is clinically sound and meets the LHN priorities, other options to achieve this without reducing outpatient activity have not been widely enacted. Clearly internal efficiency initiatives such as improving utilisation, productivity and patient attendance need to be addressed. However, the financial case for expanding operating hours to accommodate both admitted and outpatient activity should be also supported where business cases demonstrate financial viability.

Outpatient median time from referral to exam (hours)

<table>
<thead>
<tr>
<th>Modality</th>
<th>FMC</th>
<th>LMH</th>
<th>MBH</th>
<th>RAH</th>
<th>RGH</th>
<th>TQEH</th>
<th>WCH</th>
<th>Metro 3 (private)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angio</td>
<td>6.88</td>
<td>6.16</td>
<td></td>
<td>14.17</td>
<td>5.94</td>
<td>6.13</td>
<td>6.00</td>
<td>na</td>
</tr>
<tr>
<td>CT</td>
<td>11.21</td>
<td>25.07</td>
<td>4.78</td>
<td>47.67</td>
<td>4.75</td>
<td>7.00</td>
<td>7.19</td>
<td>2.90</td>
</tr>
<tr>
<td>Fluoro</td>
<td>7.11</td>
<td>7.05</td>
<td></td>
<td>0.15</td>
<td>6.99</td>
<td>7.96</td>
<td>16.99</td>
<td>na</td>
</tr>
<tr>
<td>General</td>
<td>0.02</td>
<td>0.03</td>
<td>0.94</td>
<td>8.85</td>
<td>0.75</td>
<td>0.02</td>
<td>0.01</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>MRI</td>
<td>46.03</td>
<td>22.89</td>
<td></td>
<td>74.78</td>
<td>9.88</td>
<td>55.95</td>
<td>13.00</td>
<td></td>
</tr>
<tr>
<td>Mammo</td>
<td>0.08</td>
<td>88.01</td>
<td></td>
<td>170.84</td>
<td>66.96</td>
<td>3.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NucMed</td>
<td>7.09</td>
<td>11.02</td>
<td></td>
<td>0.00</td>
<td>27.07</td>
<td>6.19</td>
<td>14.14</td>
<td>1.9-5.8</td>
</tr>
<tr>
<td>Ultrasound</td>
<td>19.84</td>
<td>36.26</td>
<td>14.06</td>
<td>33.96</td>
<td>9.75</td>
<td>7.97</td>
<td>12.27</td>
<td>1.30</td>
</tr>
</tbody>
</table>
2.7 Activity – fail to attend appointment

Fail to attend rates are not monitored widely across Australia, but have been used to drive performance improvement in outpatient access.

Fail to attend rates are a good indicator that the service is not meeting patient expectations.

Few departments monitor FTAs, however a benchmark has been provided. It is recommended that monitoring FTAs should form part of a performance scorecard and that booking practices and service availability are looked at as key strategies to reduce service inefficiency.

- Fail to attend rates are a good indicator of poor booking practices, a lack of choice and flexibility for appointments, patient dissatisfaction with waiting times, and other practical access issues e.g. car parking.
- FTA rates are not monitored routinely in SA or in many other jurisdictions.
- Departments in SAMI often highlighted that FTAs were considered helpful in managing inpatient demand. However, this is not the ideal method of service and activity planning, and results in inefficient and duplicated administrative practices and underutilised capacity.
- One Australian major metropolitan health service\(^1\) (sourced by KPMG) has achieved significant improvements access and FTA rates (as detailed right) through service redesign. These provide a good benchmark or target for future FTA analysis.
- The key methods to achieve these results included:
  - implementation of patient choice in bookings
  - Automated reminder processes.

<table>
<thead>
<tr>
<th>Modality</th>
<th>Metro 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angio</td>
<td>0%</td>
</tr>
<tr>
<td>CT</td>
<td>4.9%</td>
</tr>
<tr>
<td>Cardio</td>
<td>NA</td>
</tr>
<tr>
<td>Cephs</td>
<td>Included in Generals</td>
</tr>
<tr>
<td>Fluoro</td>
<td>4.9%</td>
</tr>
<tr>
<td>General</td>
<td>11.1%</td>
</tr>
<tr>
<td>MRI</td>
<td>1.9%</td>
</tr>
<tr>
<td>Mammo</td>
<td>3.7%</td>
</tr>
<tr>
<td>Mobile</td>
<td>NA</td>
</tr>
<tr>
<td>NucMed</td>
<td>Not included</td>
</tr>
<tr>
<td>Ultrasound</td>
<td>6.9%</td>
</tr>
</tbody>
</table>

\(^1\) – in order to maintain confidentiality of data, the name of this site has not been included as agreed when sourcing the data in the table provided above.
While there remain some data quality variations in exam time and report time, this is a more automated process and is still considered a useful dataset to review.

- SAMI data shows variation by site and by modality – largely due to work practices and voice recognition use.

- Time to report data is more robust although efforts to improve data quality within all sites and to ensure consistency between sites needs to continue to support SAMI to focus on performance improvement.

- Data for inpatients by site and by modality illustrate the better performance of smaller sites, which indicates a greater degree of predictability in work practices, less emergency demand, and potentially different staffing models.

While some data quality issues for capturing report time were noted, it should also be recognised that FMC’s performance is also reflective of the site’s long experience and utilisation with voice recognition technology – demonstrating its effectiveness in improving productivity.

- Other sites without voice recognition experienced significant delays due to reliance on typists to complete reports. This should reduce, most importantly for RAH, as the ESMI rollout proceeds. It should continue to be tracked as a performance improvement measure.
2.7 Activity – reporting times

Report turnaround times show opportunity for improvement for major sites and most modalities when compared to benchmark sites in the public and private sector.

- Benchmarking data (in hours) shows considerably longer reporting times in SAMI across most modalities and sites.
- FMC performs best out of the major sites – driven by its use of voice recognition, however there are also some data quality issues noted.
- Public hospitals elsewhere are achieving rapid turnaround times for reports, and a range of practice measures to achieve this have been identified. Not all of these are dependent on ESMI, many also relate to work practices and a performance culture.
- Transition of services to the new RAH should improve report turnaround times.

<table>
<thead>
<tr>
<th>Modality</th>
<th>FMC</th>
<th>LMH</th>
<th>MBH</th>
<th>RAH</th>
<th>RGH</th>
<th>TQEIH</th>
<th>WCH</th>
<th>Metro 1</th>
<th>Metro 2</th>
<th>Metro 3 (private)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angio</td>
<td>2.98</td>
<td>17.52</td>
<td>40.35</td>
<td>0.60</td>
<td>23.40</td>
<td>4.00</td>
<td>4.20</td>
<td>2.0-9.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CT</td>
<td>1.57</td>
<td>19.48</td>
<td>1.98</td>
<td>14.70</td>
<td>1.13</td>
<td>18.33</td>
<td>18.78</td>
<td>1.60</td>
<td>0.5-1.0</td>
<td>4.70</td>
</tr>
<tr>
<td>Cardio</td>
<td>42.12</td>
<td>43.13</td>
<td></td>
<td></td>
<td></td>
<td>18.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cephs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>26.70</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluoro</td>
<td>1.12</td>
<td>5.73</td>
<td>19.93</td>
<td>5.62</td>
<td>21.95</td>
<td>15.93</td>
<td>2.10</td>
<td>0.4-16.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>1.52</td>
<td>15.03</td>
<td>1.48</td>
<td>12.50</td>
<td>0.43</td>
<td>19.03</td>
<td>19.38</td>
<td>8.5*</td>
<td>0.6-16.1</td>
<td>3.25</td>
</tr>
<tr>
<td>MRI</td>
<td>5.97</td>
<td>4.26</td>
<td>16.80</td>
<td>20.98</td>
<td>21.23</td>
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<td>1.2-1.7</td>
<td>5.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mammo</td>
<td>0.34</td>
<td>19.79</td>
<td></td>
<td>0.39</td>
<td>25.77</td>
<td>1.30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobile</td>
<td>1.05</td>
<td></td>
<td>9.82</td>
<td>0.48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NuMed</td>
<td>1.59</td>
<td>0.82</td>
<td>2.10</td>
<td>51.52</td>
<td>1.70</td>
<td>1.50</td>
<td>1.60</td>
<td>1.1-2.1</td>
<td>2.25-3.3</td>
<td></td>
</tr>
<tr>
<td>Ultrasound</td>
<td>0.68</td>
<td>18.65</td>
<td>1.38</td>
<td>3.15</td>
<td>3.58</td>
<td>2.62</td>
<td>1.60</td>
<td>0.4-0.7</td>
<td>1.85</td>
<td></td>
</tr>
</tbody>
</table>

* includes cephs and mobile

- Benchmarking shows reporting times below SAMI levels for the major modalities compared to other public sites (with exception of FMC)
- Both private and public sector comparisons show same-day reporting can be achieved
- Queensland Health uses the regular reporting of % of scans reported in 24 hours as a performance measure across the state. The number of non-reported scans is also tracked as a quality measure.

Discussion with benchmark sites identified some of the following areas as important to reduce reporting times:

- Reduced distractions especially for MRI, including dedicated rooms or off-site reporting facility
- Upgraded PC access, screen resolution and voice recording/recognition
- Reduced number of images sent to radiologists (post-processing)
- Increased visibility of work and backlog to create more of a team environment and support – potentially supported by an internal ‘reporting incentive’
- Monthly reporting and performance monitoring to increase accountability and comparison
- Use flexible resources (including the private sector) for reporting at times for load balancing (eg during vacancy, sabbaticals)
2.8 Governance, structure, quality and safety

There is limited use of service agreements between SAMI and LHNs that impact on the governance for performance and ownership of issues.

Stakeholders frequently identified governance as the key challenge in maximising the benefits of SAMI implementation. This was supported through the number of examples of slow or uncertain decision making processes and unclear reporting structures.

The most prominent issues are the lack of communication channels and formal agreements between SAMI and LHNs, resulting in a lack of joint planning of imaging services, less state-wide input in service provision and change, and unclear and inconsistent management of financial and performance information.

In addition, it was noted that while the availability of senior staff had improved the progression and development of SAMI, there had been turnover and uncertainty of reporting relationships. Together with some uncertainty regarding the future directions of SAMI, many stakeholders expressed their lack of confidence and inability to make improvements real or sustained.
2.8 Governance, structure, quality and safety

There are no central resources to coordinate quality and safety, potentially resulting in duplication of effort at sites and inconsistent practices

Quality & safety monitoring and structures

Due to the absence of central quality and safety overarching strategy, cross site collaboration and resources, within SAMI, there has been limited progression with standard quality and safety initiatives.

The key findings include:

- Incident reporting is undertaken on a site level and SAMI does not have full visibility of these reports, other than serious incidents. The “Safe Learning System” used for looking at trends across SA Health does not give specific feedback of incidents to SAMI and LHNs are also not provided with information on incidents within radiology areas.

- There is no regular quality and safety performance report for SAMI or by LHN summarising key quality performance indicators such as patient ID audits, time-out compliance, fire training, hand hygiene or Basic Life Support training, to ensure consistency with the National Safety and Quality Health Service Standards.

- There is a growing trend in both the use of ward-based ultrasound machines and other services using imaging techniques and equipment (eg: obstetrics and cardiology). While a notable improvement in access to diagnostic services and support, it does pose a risk that services and diagnostic information are occurring outside the scope of imaging services and potentially outside of current and future ICT systems. These matters highlight the potential risk that:
  - un-skilled or un-credentialled staff use certain equipment or conduct certain procedures
  - medical records do not have complete diagnostic information (such as reports from non-imaging sources)
  - clinicians may make care management decisions without the full extent of patient information.

These areas, while not posing immediate issues, should be addressed through both site and state wide processes to determine the appropriate streamlining and standardisation of process and reporting. Existing quality forums and clinical governance mechanisms could provide a suitable vehicle for conducting these activities.
3. Improvement Opportunities & Benefits Identification
3. Improvement opportunities

25 key improvements have been identified in six areas. The estimated annual ‘full potential’ benefits are up to $11m per annum. A range of additional benefits will enable further efficiency and service improvements.

The 25 improvement opportunities were identified through analysis of the current state of efficiency and performance, consultation with stakeholders and benchmark sites, review of previous improvement implementations and literature and case studies from other sites and jurisdictions.

They have been designed independent of the implementation choices, but do assume some level investment.

The full potential calculations have been further refined based on a number of implementation options, investments and extent of delivery detailed from page 56.

<table>
<thead>
<tr>
<th>Area</th>
<th># opportunities</th>
<th>Quantifiable benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Financial &amp; performance management</td>
<td>7</td>
<td>$8.3m</td>
</tr>
<tr>
<td>2 Service provision</td>
<td>6</td>
<td>$2.1m</td>
</tr>
<tr>
<td>3 Workforce</td>
<td>4</td>
<td>$0.6m</td>
</tr>
<tr>
<td>4 ICT</td>
<td>1</td>
<td>Delivered separately</td>
</tr>
<tr>
<td></td>
<td></td>
<td>through ESMI benefits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>planning</td>
</tr>
<tr>
<td>5 Governance</td>
<td>5</td>
<td>Unquantifiable</td>
</tr>
<tr>
<td>6 Safety, quality &amp; consumer experience</td>
<td>2</td>
<td>Unquantifiable</td>
</tr>
</tbody>
</table>

- Up to $6.3m in expenditure improvements
- $3.4m in revenue improvements, through improved equipment utilisation
- $0.7m in service improvement (after hours and nuclear medicine)
- Enhancing the role of Radiographer Assistants
- Reduction in various expense line items
- Described on page 50
3. Improvement opportunities

The opportunities are targeted in order to enable or directly achieve the benefits. They individually provide the resources, process improvements, service enhancements and governance arrangements required to deliver the estimated savings and efficiencies.

The short list was refined from a long list of over 130 opportunities identified throughout the Review.

The detail on the improvement’s achievability, requirements, timeframes and dependencies was further developed and validated in a solutions workshop with SAMI staff.

**Detailed improvement opportunity list**

<table>
<thead>
<tr>
<th>Area</th>
<th>ID</th>
<th>Improvement Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial &amp; Performance Management</td>
<td>1</td>
<td>Implement site specific savings strategies in line with SAMI benchmarks</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Optimise equipment utilisation for revenue generation</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Implement a performance scorecard as a single source of truth for performance reporting</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Implement recommendations from SPF review</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Prototype a reporting fee model for discrete areas</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Implement a state-wide activity based costing model in parallel to LHN agreements</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Formally evaluate and define the benefits of central capital management and planning</td>
</tr>
<tr>
<td>Governance</td>
<td>8</td>
<td>Implement additional resources to deliver the improvements</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Implement a delegations of authority for non-financial areas</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Implement Service Level Agreements for all LHNs</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Review campus management structures and align with LHN requirements</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Establish and implement a SAMI corporate identity (if SAMI is to continue)</td>
</tr>
<tr>
<td>ICT</td>
<td>13</td>
<td>Enhance roll out of ESMI by increasing business process redesign/change capabilities and in the longer term implement a centralised informatics function</td>
</tr>
<tr>
<td>Quality and Safety</td>
<td>14</td>
<td>Implement a suite of referral protocols</td>
</tr>
<tr>
<td>Service provision</td>
<td>15</td>
<td>Establish collaborative forums to drive quality and safety improvements</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>Review after hours medical staff reporting</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Extend/flexible opening hours across sites</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>Transfer Nuclear Medicine from WCH</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Implement a transition plan for new RAH</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>Implement current CHSA and NALHN acquisition plan and assess the model for future contestability</td>
</tr>
<tr>
<td>Workforce</td>
<td>21</td>
<td>Develop site specialisation and centres of excellence model</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>Expand use of radiographer assistants</td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>Implement single credentialing process</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>Review HR support to support the implementation of workforce changes</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>Consult and agree a single RoPP arrangement</td>
</tr>
</tbody>
</table>
3. Improvement opportunities

There are 3 groups of improvement initiatives: short term investment in ‘enablers’, underlying operational improvements, and longer term strategic reforms.

**Short term investment in ‘enablers’**

- 1 – Savings strategies
- 8 – Additional resources
- 13 – Enhancing the roll out of ESMI with business/process redesign and change management

**Longer term strategic reforms**

- 6 – Implement an activity cost for LHNs to encourage volume management
- 19 – A service and workforce transition plan for the new RAH
- 21 – Developing site sub-specialisation and centres of excellence
- 25 – Consult and agree a single RoPP arrangement

**Underlying continuous improvement initiatives**

Relating to clinical workflows, protocols and productivity measures.
3. Improvement opportunities - expenditure

Opportunity #1 provides a ‘top–down’ savings strategy for specific sites in line with benchmark costs.

Potential cost savings have been calculated ‘top-down’ using the gap between current total of metropolitan site costs (FY $108m) and the total costs using the average metropolitan cost per weighted unit (as per the box left). The ‘gap’ between these costs is approximately $8.9m.

As some of these will be reasonable costs of care (such as additional staffing requirements for paediatric activity or higher complexity in tertiary sites) a range has been provided to establish the efficiency target. The range is based on a ‘low’ amount (a 15% improvement of the gap - $8.9m) and ‘high’ amount (85% improvement).

The low estimate is considered conservative as it is quite attainable based on the findings of the review and based on ‘bottom-up’ calculations for opportunities #13,#16 and #22. The mid-point of savings ($4.45m) is probably an adequate stretch target.

In workshops with SA Health and SAMI management, a figure of $3.1m was agreed as the estimate to use for benefit calculation.

The top-down calculation is based on:

1. Identifying those sites above the average cost per weighted exam (excl. CHSA)
2. Calculating their costs if they were to perform at the average state cost per weighted separation (A)
3. Calculating the gap between (A) and their actual costs (B) = $8.9m (C)
4. Calculating a range based on those sites achieving at least 15% and up to 85% of the gap (C), which is $8.7m x 15% and 85% = $1.3m-$7.6m.

Current v Potential Future Expenditure

<table>
<thead>
<tr>
<th>Category of potential saving</th>
<th>Current expenditure</th>
<th>Future expenditure at 2014 average SAMI cost</th>
<th>Top – down = $7.6m</th>
<th>‘High’ scenario (85% target)</th>
<th>‘Low’ scenario (15% target)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overtime</td>
<td>644,910</td>
<td></td>
<td></td>
<td>$0.67m</td>
<td>$0.13m</td>
</tr>
<tr>
<td>Med. Supplies</td>
<td>1,553,214</td>
<td></td>
<td></td>
<td>$0.41m</td>
<td>$0.10m</td>
</tr>
<tr>
<td>Prostheses</td>
<td>955,597</td>
<td></td>
<td></td>
<td>$0.24m</td>
<td>$0.04m</td>
</tr>
<tr>
<td>Drug Supplies</td>
<td>149,630</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weekly Paid</td>
<td>156,164</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salaried Employees</td>
<td>1,946,730</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing</td>
<td>816,327</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical officers</td>
<td>1,461,918</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure agreed as realistic and practical

Bottom up = $1.3m

Achieved through opportunities:

# 13 = $0.67m
# 16 = $0.41m
# 22 = $0.24m

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3. Improvement opportunities - expenditure

Opportunity #1 – the ‘high’ scenario would see base salaries & wages improve by up to $4.3m, and other expenditure up to $3.3m

Potential cost savings have been calculated by moving those sites above the state average to the current state average. The aggregated potential cost savings by cost category are provided below.

Moving sites close to the SAMI average will yield potential cost savings, with the majority relating to S&W costs.

Salaries and Wages ‘high’ scenario of potential savings

| Weekly Paid       | 156,164 |
| Salaried Employees| 1,946,730|
| Nursing           | 816,327 |
| Medical officers  | 1,461,918|

S&W potential savings by site

- RAH $335,811
- TQEH $381,565
- FMC $811,278
- RGH $733,660
- LMH $2,118,825
- WCH $2,118,825

Noting the need for some service specific requirements to be maintained

Other potential cost savings

| Overtime      | 644,910 |
| Med. Supplies | 1,553,214|
| Prostheses    | 955,597 |
| Drug Supplies | 149,630 |

Other costs potential savings by site

- RAH $2,824,627
- TQEH $77,863
- FMC $27,318
- RGH $268,566
- LMH $104,976
- WCH $104,976
3. Improvement opportunities – service provision

Opportunity #2 and #16: optimising equipment utilisation and adjustments to opening hours should drive improvements in revenue of up to $3.2m

Two key areas of opportunity in terms of revenue generation were identified through data review, site visits and stakeholder consultation:

1. Equipment utilisation within existing hours of service provision can be improved. A number of areas of potential underutilisation were identified through the site visits, notably at WCH and TQEH. Targeted strategies to improve utilisation is forecast to deliver benefits in a staged approach, commencing at $1.01 million. A second stage of improvements based on further availability of site and modality utilisation is expected to increase this revenue to a minimum of $2.03 million.

2. Opening hours have already been shown to be largely contained to the standard working week. LMH has provided some additional opening hours for its licensed MRI. This service enhancement has provided additional capacity to generate revenue through outpatient activity, as well as provide additional inpatient and emergency support. By extending this model to other sites, and reviewing the utilisation and combination of usage of specific licensed machines there is potential for additional revenue of a minimum of $97,000 for a single site, single modality implementation, rising to $1.33 million if extended to six sites and a second modality.

A further specific example of licensing load balance is the two machines at FMC. There is potential to refine the utilisation of these machines (one partially licensed) to further enhance revenue opportunities.

Calculations:

Utilisation Increase:
$1,014,000 revenue phase 1 ($660,000 MRI, $104,000 U/S and $250,000 CT), increasing to $2,028,000 in phase 2 rollout to other sites. No additional staffing costs are incurred.

Extended Hours:
$97,000 revenue (10 MRIs a week, $330 per scan, 40 weeks a year, one site, minus staffing and consumable costs of $87 per scan) up to $1,320,000 revenue (based on rollout to MRI and CT on 6 sites, CT incurring costs of $75 per scan)
3. Improvement opportunities - workforce

Workforce improvements have been aimed to take advantage of trends in reform and scope of practice and by creating a single credentialing process to encourage cross site flexibility.

Workforce models

A range of opportunities to improve radiologist productivity and to realise the benefits of cross-site flexibility can be achieved through workforce models.

Key opportunities include:

- Time and technology to support voice recognition
- Use of radiographer assistants
- Extended roles for radiographers
- Flexibly in workforce across sites
- Sub-specialisation for reporting
- Reduced reporting times
- Supports radiographer effectiveness
- Workload reallocation and better post-processing
- Improves access, utilisation and revenue
- Quicker access to specialists and more efficient and accurate reporting

State wide credentialing

A single state wide credentialing process would enable Radiologists (and potentially other staff like radiographers) to conduct services across sites.

For example, as new technology enables remote access, Radiologists could physically be located at quieter sites with less interruptions (such as TQEH or RGH) and conduct reports for RAH or LMH.

These staff would need to be credentialed at all sites to maintain clinical governance and transparency of performance for LHNs.

It is understood that a single medical or radiologist database is in development, however there was some uncertainty of ownership and progress of this initiative was unable to be gained through the review.

Credentialing is only one of many enablers, which also include activity based charge models, technology and flexible work practices.

Strategic Goal

Increasing consistency, streamlining demand and delivering service and cost efficiencies

Enablers

- Flexible work arrangements
- Consistent and state wide credentialing
- Technology enablement
- User/activity based funding
3. Improvement opportunities – ICT

**ICT opportunities are a key enabler of further efficiency and effectiveness benefits and dependent on the ESMI roll out.**

SA Health have previously identified a range of benefits associated with the implementation of ESMI. These include:

- Operational staff efficiencies from reduced effort in transcribing medical imaging reports, and reduced effort and time expended gaining clinician approval of report. Reduction in the number of Typist FTE per site, or across the LHN.

- Financial savings from reduced or eliminated use of film, Specifically, this includes reduced film costs and reduced need for film filing services at WCH

- Financial savings from reduced system maintenance and support costs. ESMI will reduce the number of ICT systems requiring support (with savings in FTE and software licensing costs).

SAMI advised that a number of financial benefits have already been accounted in FY15 budgets and so have been excluded from the estimates of the review. It would be reasonable to assume, based on other PACS/RIS implementations and through the enterprise nature of the ESMI system, that greater benefits will be possible. This, together with information gathered from consultations, suggests that SAMI should have greater input into the delivery of the technology, in particular through the provision of more substantial business improvement and change management support to the ESMI roll out.

**Cost savings associated with ESMI implementation**

<table>
<thead>
<tr>
<th>Cost Category</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced FTE</td>
<td>$480,000</td>
</tr>
<tr>
<td>Film costs</td>
<td>$100,000</td>
</tr>
<tr>
<td>Software maintenance</td>
<td>$170,187</td>
</tr>
</tbody>
</table>
3. Improvement opportunities – additional benefits

**Service Provision, Quality and Safety and Governance improvements**

**Service provision**

A range of flow on benefits would be expected from enhancing service provision, including:

- Improved service satisfaction and potential flow on to increasing outpatient referrals and potential revenue
- Greater capacity for meeting and streamlining demands from emergency, speeding up care planning and management
- Increased liaison between clinical staff leading to improved ability to agree protocols and potential utilisation improvements

**Governance**

- Enhanced performance management reports and embedding a continuous improvement and service approach
- Encouraging innovation and potential future efficiency opportunities
- Speeding up decision making and providing clarity on barriers
- Reducing time delays, re-work and management by consensus/committee

**Safety and Quality**

- Streamlined quality processes and improved information on incidents, trends and corrective actions
- Improvement clinical governance mechanisms to ensure the consistent delivery of safe service to patients and workplaces for staff
3. Improvement opportunities – roadmap

The implementation roadmap should focus on the six improvement areas and support the prioritised delivery of those improvements that offer the highest benefit – initially, the recruitment and resources to deliver the improvement actions.
4. Options for delivery
4. Options for delivery

To deliver on the improvements, a range of options have been designed that balance the considerations of a practical Business Case with a number of strategic influences and trends.

The identification and design of delivery options needed to recognise the need for a practical and implementation focused approach to improvement as well as the requirements of SA Health for imaging services to be innovative and aligned to strategic directions of health service delivery.

The primary challenge in looking to align with the strategic influences is that a number of them are in various stages of development and maturity in SA Health (as described in the following pages), or in the case of investment preference, subject to the availability of funds and appetite to invest resources in achieving the benefits.

As a result the options were refined in order to provide flexibility so that as the strategic initiatives are implemented and their outcomes and impact on radiology services becomes more certain, implementation timeframes and changes can be made. In addition a number of improvement opportunities were included to support and influence some of the strategic initiatives, so that imaging services are represented or leading particular areas – for example #19 which recommends the development of a Service & Workforce Transition Plan for the new RAH.

### Improvement areas

- Financial & performance management
- Service provision
- Workforce
- ICT
- Governance
- Safety, quality & client experience

### Key considerations for Business Case development

- How do we deliver these improvements?
- What is required?
- Is there a net benefit?
- Who should be responsible for delivery?
- How long will it take to see results?

### Strategic influences

- Contestability of services
- Transforming Health
- New Royal Adelaide Hospital
- Investment preference and change readiness

The assumption for this strategic influence is that SA Health are looking for efficiencies and low cost options for improvement. There is therefore an emphasis on options that leverage existing resources and that work to reduce the impact of change.
4. Options for delivery – assessing contestability

Contestability is increasingly used to drive value in service provision. While not ready now, SAMI needs to be positioned for this potential in the future.

Based on the current state, SAMI is not ready to progress through a full contestability process. SAMI does have some existing models within the Country LHN that should be refined and used as a prototype for moving through the contestability process.

Based on the current maturity of SAMI (a high level assessment is illustrated below), there is a need to focus options on those that maintain public service provision. Should Government determine that it no longer wishes to provide these services, there are three stages to progress through (which are also considered in options design):

1) **Incubate** - services are immature and plans are developed to address performance issues. Generally requires 9-24 months before services can be further assessed.

2) **Optimise** - Service performance is stable, but scope exists to further improve and refine. During this period the service’s ‘value proposition’ is defined and articulated and market conditions and opportunities assessed.

3) **Commercialise** - Services are performing well and close/comparable to private sector levels. The value proposition is well defined and understood which allows potential for commercialisation subject to an appropriate supply market.

### Factors required for value to be delivered through contestability

<table>
<thead>
<tr>
<th>High level assessment of SAMI</th>
<th>Undeveloped</th>
<th>Well developed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current roles and capabilities in service delivery and management.</td>
<td>▲</td>
<td></td>
</tr>
<tr>
<td>Scope and costs of current services</td>
<td>▲</td>
<td></td>
</tr>
<tr>
<td>Need for services</td>
<td>▲</td>
<td></td>
</tr>
<tr>
<td>Role of Government in future service delivery</td>
<td>▲</td>
<td></td>
</tr>
<tr>
<td>Market appetite and availability</td>
<td>▲</td>
<td></td>
</tr>
<tr>
<td>Risks and benefits of future solutions</td>
<td>▲</td>
<td></td>
</tr>
</tbody>
</table>

### Contestability Options

- Public provision
- Keep & improve
- Restructuring through centralised/shared service
- Building a market
- Joint ventures
- Public private partnerships
- Payment by outcomes
- Managed services
- Outsourcing
- Private/NGO provision
4. Options for delivery – other strategic influences

There are two key strategic developments in SA Health that will impact on medical imaging service provision over the next 1-5 years.

**Transforming Health Strategy**

SA Health has embarked on a program to transform the South Australian health system in a re-think of the way health care will be delivered. A set of standards and models of care that should be provided through the health system will be developed. The standards will drive how best to deliver health care into the future and how SA Health should transform to meet the expected standards.

**The New Royal Adelaide Hospital**

The imaging department at the new Royal Adelaide Hospital (new RAH) moves away from its current centralised model to a decentralised model, operating over four floors. Radiology is expected to have governance over all radiology equipment including angiography suites.

This decentralised model at the new RAH means that there will be a significant increase in the number of imaging equipment required to service the four floors. It also requires a change in staffing levels, in particular radiographers. There are opportunities to appoint radiographer assistants (not currently employed at RAH) to help support staffing efficiency created by a decentralised model. It is expected that the radiographers will be multi-skilled to allow them to work across modalities as required (especially in out-of-hours services such as ED). Recruitment and training requirements will need to be considered, in addition to emerging trends such as the ageing workforce and expectations around work and lifestyle. A new departmental structure will need to be considered.

With the decentralisation of imaging, reporting rooms will also be spread over the areas. The current RAH has six reporting rooms (with 14 workstations); 3 in the main imaging department, 1 in Women's Health Centre, 1 in MRI and 1 in the Executive Suite. In the new RAH there will be 11 reporting rooms (with 20 plus workstations), which with the introduction of ESMI will allow radiologists to report studies from other areas based on their expertise.
4. Options for delivery

There are four options for the future that have been identified. They have been further developed using a high performance framework.

Identified Options

In order to deliver the potential benefits, a range of options for the most appropriate structure and governance for medical imaging have been considered. Their core components have been outlined in the following pages along with the key responsibilities in line with the high performing healthcare framework. Each option has also been assessed on its potential to achieve the full benefits, and a weighting applied together with investments to calculate net benefits.

An evaluation of these options has then been undertaken (in Section 5) against an agreed set of qualitative criteria, and a more detailed benefit comparison.

<table>
<thead>
<tr>
<th>Option 1</th>
<th>Option 2</th>
<th>Option 3</th>
<th>Option 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>No change (base case)</td>
<td>Revert to LHN Structure</td>
<td>Improve SAMI</td>
<td>Hybrid Model</td>
</tr>
<tr>
<td>Continue with existing SAMI arrangements for governance and coordination of medical imaging services.</td>
<td>Discontinue the existing SAMI structure and revert to LHN ownership and provision of imaging on a local level. SA Health shared service support would continue the capital procurement function.</td>
<td>Retain SAMI, and enable it to accelerate delivery of a range of agreed improvements with appropriate support. Once SAMI has been optimised, it can take on a more strategic focus through a contestability approach.</td>
<td>Deliver imaging service locally through LHNs, whilst a shared services team in SA Health focusses on business improvement in preparation for contestability, by driving cross-site efficiencies and improvements, procurement, and contract management.</td>
</tr>
</tbody>
</table>

The High Performing Healthcare Framework

The High Performing Healthcare framework has been developed based on those elements that feature in high performing health care providers across the country and internationally. While financial performance is a key driver in this review, this framework ensures that the range of other influencers and enablers are also considered so that improvement is considered as an outcome of not only direct financial drivers, but also the supporting governance, strategy, organisational practices, workforce and use of information.

In describing the features of each delivery options, each segment of this framework is used.
4. Options for delivery

**Option 1: No change (base case)**

Under this option, SAMI will continue to function using the same level of central resourcing and governance models remain unchanged. Implementation of existing initiatives will continue. This results in minimal change to the existing systems and processes, the continuation of current rollout of ESMI and the associated benefits would be retained. This option however retains the current governance, structure and resourcing resulting lower capacity and capability to implement a broad range of improvement strategies.

<table>
<thead>
<tr>
<th>High Performing Healthcare Element</th>
<th>Overview of Service Model for Option 1</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective Leadership</td>
<td>Small central leadership team supported by campus heads and shared service central support for HR, finance and other key support functions. No change to current performance information reporting, or to governance of SAMI within CALHN structure.</td>
<td>SAMI and CALHN</td>
</tr>
<tr>
<td>Strategy for Clinical Excellence</td>
<td>Minimal documentation and implementation of an agreed clinical strategy continues. Monitoring of clinical quality continues with a mixture of central and LHN information for complaints and incidents</td>
<td>SAMI</td>
</tr>
<tr>
<td>Structure</td>
<td>No change to current service provision, resulting in variation in utilisation and service access. Retains some use of the private sector with contracts negotiated as per current arrangements.</td>
<td>SAMI</td>
</tr>
<tr>
<td>Process</td>
<td>No change to current level of performance information at SAMI or campus level. Project management remains ad hoc with minimal cross-site interaction or transferability.</td>
<td>SAMI</td>
</tr>
<tr>
<td>People</td>
<td>No change to current productivity, site arrangements and transfer of staff between sites.</td>
<td>SAMI</td>
</tr>
<tr>
<td>Expenditure</td>
<td>Expenditure continues to be tracked at the cost centre level. No change to budget build process.</td>
<td>SAMI</td>
</tr>
<tr>
<td>Clinical Efficiency</td>
<td>No significant changes to service models or equipment utilisation</td>
<td>SAMI</td>
</tr>
<tr>
<td>Procurement</td>
<td>Procurement for major capital expenditure continues to be managed centrally by SAMI.</td>
<td>SAMI</td>
</tr>
<tr>
<td>Revenue Optimisation</td>
<td>No change to current revenue strategies</td>
<td>SAMI</td>
</tr>
<tr>
<td>Business Intelligence and Analytics</td>
<td>Reporting continues as per current state, although some functionality will change with rollout of ESMI</td>
<td>SAMI</td>
</tr>
<tr>
<td>System and Technology</td>
<td>Continue with implementation of ESMI as planned</td>
<td>SAMI</td>
</tr>
</tbody>
</table>
As outlined in the table below, this option has little additional requirements for implementing the improvement initiatives.

<table>
<thead>
<tr>
<th>Option One</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirements for implementation</td>
<td>This is the current state and therefore there are no additional implementation requirements. Recruitment to current vacancies would continue as per standard processes and no additional investment in FTE or capability would be required. Current investments underway, such as ESMI, continue unchanged.</td>
</tr>
<tr>
<td>Likelihood to achieve benefits</td>
<td>60%</td>
</tr>
<tr>
<td>Benefits over 5 yrs (not incl investment)</td>
<td>The ability of SAMI to achieve the benefits and improvements is considered low.</td>
</tr>
<tr>
<td>Benefits over 5 yrs (not incl investment)</td>
<td>This option is expected to realise benefits of $16.5m</td>
</tr>
<tr>
<td>Timeframes</td>
<td>The option is already in place.</td>
</tr>
<tr>
<td>Responsibility</td>
<td>There are no changes to the current responsibilities. The CALHN CEO and SCSS CEO retains senior responsibility for SAMI, with day to day leadership through a SAMI Executive Director role.</td>
</tr>
</tbody>
</table>
### 4. Options for delivery

**Option 2: Revert to LHN Structure**

Under this option, the bulk of responsibilities fall to LHNs with a small amount of central support absorbed into SA Health to retain the benefits already associated with centralised capital planning and procurement.

<table>
<thead>
<tr>
<th>High Performing Healthcare Element</th>
<th>Overview of Service Model for Option 2</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective Leadership</td>
<td>No central SAMI leadership or administrative positions. Governance returns to LHNs who will manage medical imaging as part of their range of clinical services. Performance of services would be monitored as part of internal LHN governance.</td>
<td>LHNs</td>
</tr>
<tr>
<td>Strategy for Clinical Excellence</td>
<td>Focus on clinical quality, clinical strategy and consumer experience at the LHN level</td>
<td>LHNs</td>
</tr>
<tr>
<td>Structure</td>
<td>Clinical service configuration can be amended within the LHN (eg to move services between LHN campuses), however reconfiguration and sub-specialisation of services across SA Health would be less achievable than current arrangements</td>
<td>LHNs</td>
</tr>
<tr>
<td>Process</td>
<td>Performance information and project management capability achieved at the LHN level.</td>
<td>LHNs</td>
</tr>
<tr>
<td>People</td>
<td>Local focus on workforce productivity, roles and configuration. Cross-LHN opportunities still possible but on a more limited basis</td>
<td>LHNs</td>
</tr>
<tr>
<td>Expenditure</td>
<td>Opportunities for cost reduction would be identified and implemented locally, without any system-wide comparison.</td>
<td>LHNs</td>
</tr>
<tr>
<td>Clinical Efficiency</td>
<td>Can be driven at the LHN level, changes across SA Health more limited requiring LHN collaboration.</td>
<td>LHNs</td>
</tr>
<tr>
<td>Procurement</td>
<td>Minimal impact, provided that SA Health retained a centralised approach to capital procurement.</td>
<td>SA Health</td>
</tr>
<tr>
<td>Revenue Optimisation</td>
<td>Local level focus. Transfer of activity to maximise revenue through cross-site strategies more limited, although still supported by ESMI.</td>
<td>LHNs</td>
</tr>
<tr>
<td>Business Intelligence and Analytics</td>
<td>Reporting continues at the LHN level, with some improved functionality as ESMI rolls out.</td>
<td>LHNs</td>
</tr>
<tr>
<td>System and Technology</td>
<td>Continue with implementation of ESMI as planned.</td>
<td>SA Health</td>
</tr>
</tbody>
</table>
4. Options for delivery

**Option 2: Revert to LHNs - implementation requirements and benefits**

As outlined in the table below, this option has little additional requirements and would generate some savings from reducing the corporate costs of SAMI. However it is assume that it would be unlikely to achieve the full benefits of the improvement initiatives.

<table>
<thead>
<tr>
<th>Option Two</th>
<th>Description</th>
</tr>
</thead>
</table>
| Requirements for implementation | The key changes required are:  
+ Dissolution of SAMI structures eg decentralisation of budgets, reporting and corporate support  
+ Redeployment of current SAMI central staff to LHNs  
+ Some additional capability at each site to support improvements (estimated at 4-5 FTE) |
| Likelihood to achieve benefits | 60%  
LHNs would be able to implement a number of the improvement initiatives such as expenditure savings, increased administration charges and capacity/service improvements. However without standardised implementation support or project management it is unlikely that the full amount would be realised. |
| Benefits over 5 yrs (not incl investment) | This option is expected to realise benefits of $18.2m |
| Timeframes          | • Implementation of this structure could be achieved within six months  
• Realisation of the key benefits outlined above can be achieved in a 3-5 year timeframe |
| Responsibility      | This option shifts responsibility for SAMI away from CALHN to the LHNs. Responsibility of management of the change should be led centrally by SA Health. |
This option retains SAMI as the management entity for provision of medical imaging services for SA Health. In contrast to option one, this option includes support for accelerated implementation of a range of improvements to optimise the current model of service provision as a first priority. This will deliver larger and faster benefits.

Following a 2-3 year focus on this approach, SAMI will then be well positioned to move towards a more contestable approach to service provision.

<table>
<thead>
<tr>
<th>High Performing Healthcare Element</th>
<th>Overview of Service Model for Option 3</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective Leadership</td>
<td>SAMI has a clearly articulated role and strategy, with clear accountabilities centrally and to LHNs. The SAMI leadership team is strengthened in key areas of operational implementation, quality and safety, project management and potentially research, HR and finance. The leadership is focussed on articulation and delivery of an agreed strategy which is supported by a strong focus on performance management.</td>
<td>SAMI/SA Health</td>
</tr>
<tr>
<td>Strategy for Clinical Excellence</td>
<td>The clinical strategy articulates the role and range of services to be provided at each site and in the context of LHN and state planning. It supports sub-specialisation to improve efficiency and clinical quality and there is a strong focus on quality, safety, models of care and consumer experience at the SAMI and site levels.</td>
<td>SAMI</td>
</tr>
<tr>
<td>Structure</td>
<td>The structure of medical imaging services promotes equity of access across SAMI through patient choice, staff allocation and equipment distribution and usage, and drives sub-specialisation through cross site collaboration.</td>
<td>SAMI</td>
</tr>
<tr>
<td>Process</td>
<td>Delivery of improvements across SAMI is progressed rapidly through clear central and site based project management. Improvements are spread rapidly across SAMI through inter-site collaboration and transferability.</td>
<td>SAMI</td>
</tr>
<tr>
<td>People</td>
<td>Staffing models are appropriate to the skill mix and activity required. Training, recruitment and retention support service delivery, and barriers to cross-site working are addressed.</td>
<td>SAMI</td>
</tr>
<tr>
<td>Expenditure</td>
<td>Expenditure is reduced through a focus on consistency and best practice implementation across a range of cost areas. Following an optimisation phase, expenditure reduction is more likely to be achieved through progression through a contestable framework.</td>
<td>SAMI</td>
</tr>
<tr>
<td>Clinical Efficiency</td>
<td>Efficiency is optimised through detailed review of utilisation by modality, room, and staff type. Opportunities to increase throughput and efficiency are managed through cross site working practices and site liaison through SLAs, and subsequently through a contestable framework..</td>
<td>SAMI</td>
</tr>
<tr>
<td>Procurement</td>
<td>Procurement continues through the centralised SAMI process</td>
<td>SAMI</td>
</tr>
<tr>
<td>Revenue Optimisation</td>
<td>Revenue is optimised through a strong focus on referral quality, expanding outpatient revenue generation, optimising throughout and use of machines to maximise billing between sites (eg optimal use of MRI licences) and effective billing and revenue management practices.</td>
<td>SAMI</td>
</tr>
<tr>
<td>Business Intelligence and Analytics</td>
<td>Performance across SAMI is enhanced through the generation and use of reports on all key priority performance areas.</td>
<td>SAMI</td>
</tr>
<tr>
<td>System and Technology</td>
<td>ESMI implementation is accelerated, service delivery models are changed to support realisation of the potential benefits.</td>
<td>SAMI</td>
</tr>
</tbody>
</table>
4. Options for delivery

Option 3: Improve SAMI - implementation requirements and benefits

As outlined in the table below, this option has some significant requirements for implementation and investment. In addition, this option would require the addition of at least three improvement initiatives: the establishment of a corporate identity, implementation of SLAs for all LHNs and centralised HR support.

<table>
<thead>
<tr>
<th>Option Three</th>
<th>Description</th>
</tr>
</thead>
</table>
| Requirements for implementation | In order to enable SAMI to deliver the improvement program, the following key elements are assumed:  
- A core SAMI leadership team of an Operations Director and Clinical Director, supported by a business manager and core project team. (additional cost of $400k)  
- Overheads and discretionary expenditure estimated at $50k  
- A clinical and operational head per LHN (potentially a reduction in existing costs)  
- A SAMI lead for each modality (no EFT increase, some higher duties/increment cost, estimated at $50k)  
- Confirmation on SAMI remaining under SCSS and CALHN. Wherever SAMI sits, this arrangement will require senior leadership to support SAMI’s strategic direction and hold it to account for performance and delivery. |
| Likelihood to achieve benefits | 70%  
With dedicated implementation support, it is more likely that these resources would be able to drive improved performance and the realisation of benefits. |
| Benefits over 5 yrs (not incl investment) | This option is expected to realise benefits of $29.6m |
| Timeframes | Implementation of the structural and governance elements to support this option can be achieved within 6 months. Timeframes for implementation of the benefits will be realised in 1-3 years |
| Responsibility | The lead responsibility for implementation of this option currently sits with the CALHN CEO. SA Health will need to decide whether this structure should be retained. |
This option encompasses a hybrid approach, with local management and provision of services, local accountability and implementation of service improvements, coupled with a more targeted central support role within SA Health focussed on business improvement to accelerate progress through the contestability spectrum.

Such as a ‘networked’ model could be applied in a number of forms and combinations. The table opposite provides the model used to test the option.

Irrespective of the combination of responsibility, network models require a degree of central coordination and have a varying level of accountability controls.

<table>
<thead>
<tr>
<th>High Performing Healthcare Element</th>
<th>Overview of Service Model for Option 4</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective Leadership</td>
<td>Leadership for service delivery will revert to the LHN structure. SA Health will lead the business improvement focus centrally, through a focus on service planning, IT implementation and process improvement.</td>
<td>LHNs and SA Health</td>
</tr>
<tr>
<td>Strategy for Clinical Excellence</td>
<td>The clinical focus will be driven locally by the LHNs, who will be responsible for service quality, outcomes and consumer satisfaction.</td>
<td>LHNs</td>
</tr>
<tr>
<td>Structure</td>
<td>Service provision across SA Health will be led through the central service planning approach, which will include development of the information required to move to a contestable approach to services. LHNs can manage transfer of services between their campuses locally.</td>
<td>SA Health</td>
</tr>
<tr>
<td>Process</td>
<td>Performance information will be used centrally to support service planning, however LHNs will manage local performance. Project implementation will be available centrally to drive key improvement strategies.</td>
<td>LHNs and SA Health</td>
</tr>
<tr>
<td>People</td>
<td>All workforce matters will be managed at the LHN level</td>
<td>LHNs</td>
</tr>
<tr>
<td>Expenditure</td>
<td>Budgets will sit within LHNs, however there will be central focus on expenditure reduction strategies across all LHNs</td>
<td>LHNs and SA Health</td>
</tr>
<tr>
<td>Clinical Efficiency</td>
<td>Monitoring and improvements to efficiency will be managed within LHNs, however SA Health will drive key cross-site efficiency improvement strategies.</td>
<td>LHNs and SA Health</td>
</tr>
<tr>
<td>Procurement</td>
<td>This will continue to be managed centrally.</td>
<td>SA Health</td>
</tr>
<tr>
<td>Revenue Optimisation</td>
<td>Revenue strategies can be managed at the LHN level, however SA Health will drive key cross-site initiatives.</td>
<td>LHNs and SA Health</td>
</tr>
<tr>
<td>Business Intelligence and Analytics</td>
<td>Business intelligence information will be used both at the LHN level and centrally as part of a focus on service planning and preparation for contestability.</td>
<td>LHNs and SA Health</td>
</tr>
<tr>
<td>System and Technology</td>
<td>ESMI rollout will be accelerated and the efficiency improvements through cross-site collaboration driven centrally.</td>
<td>SA Health</td>
</tr>
</tbody>
</table>
As outlined in the table below, this option requires investment, mainly in the establishment of a central improvement and project management capability within SA Health. In addition it would require substantial accountability for achievement to be brought upon LHNs by SA Health in order to achieve the improvements. There are potentially more coordination efforts and risks associated with maintaining variable processes.

It does however create greater ownership at LHN level to enhance services in line with broader service improvements.

<table>
<thead>
<tr>
<th>Option Four</th>
<th>Description</th>
</tr>
</thead>
</table>
| Requirements for implementation | Implementation of this option would require:  
• Dissolution of budgets, reporting and some staff to LHNs as per option 2  
• The establishment of a SA Health shared services team to focus on medical imaging. This would require 3 EFT to focus on ESMI rollout and benefits realisation, service planning, development of performance and cost data and preparation for contestability (estimated at $300k) |
| Likelihood to achieve benefits | 65%  
With dedicated implementation support, it is more likely that these resources would be able to drive improved performance and the realise benefits, however there is potential risk of additional coordination effort and so a slightly less than Option 3 likelihood has been allocated. |
| Benefits over 5 yrs (not incl investment) | This option is expected to realise benefits of $23.7m |
| Timeframes | The implementation of this option is longer. The first stage of dissolution of services to LHNs is likely to take 6 months. The establishment of a central team with the core skills and capabilities required would require 6-12 months.  
Benefits realisation are achievable within a 3-5 year timeframe |
| Responsibility | Responsibility for implementation of this option lies centrally within SA Health. |
4. Options for delivery

Summary requirements page

The table below provides a short summary of the requirements for implementation and net benefit estimates for each option. Further qualitative assessment is on page 68.

<table>
<thead>
<tr>
<th>Requirements for implementation</th>
<th>Option 1</th>
<th>Option 2</th>
<th>Option 3</th>
<th>Option 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil – base case assumption</td>
<td>Disbanding of SAMI and changes of staff, accounting and management structures. Investment pushed to LHNs for implementation</td>
<td>Core corporate team with additional project staffing (total estimated costs of $490,000 p.a)</td>
<td>Small project team to drive improvements with SA Health. Would require similar investment to option 3) across the state.</td>
<td></td>
</tr>
<tr>
<td><strong>Likelihood to achieve benefits</strong></td>
<td>60% - implementation would be slow and limited by resource capacity</td>
<td>60% - LHNs should achieve individual measure, but limited state wide consistency and integration</td>
<td>70% - dedicated improvement resources increase likelihood of achievement</td>
<td>65% - the dispersed responsibilities will require additional coordination/ accountability effort and so should be less to central responsibility</td>
</tr>
<tr>
<td>Equipment utilisation</td>
<td>70% - limited by resources to manage</td>
<td>60% - limited by LHN level coordination</td>
<td>100%</td>
<td>90% - less due to need for LHN coordination</td>
</tr>
<tr>
<td>Site specific savings</td>
<td>50% (as per agreed with SAMI / SA Health)</td>
<td>60% should be more achievable if allocated to LHNs</td>
<td>50% (as per agreed with SAMI / SA Health)</td>
<td>45% - less due to distributed accountability across the network</td>
</tr>
<tr>
<td>A/hrs reporting</td>
<td>60% - limited by resources to manage</td>
<td>50% - limited by LHN level coordination</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Extend opening hours</td>
<td>70% - limited by resources to manage</td>
<td>60% - limited by LHN level coordination</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Nuclear medicine (WCH)</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Workforce initiatives</td>
<td>70% - limited by resources to manage</td>
<td>50% - limited by LHN level coordination</td>
<td>100%</td>
<td>90% - less due to distributed accountability across the network</td>
</tr>
<tr>
<td><strong>Benefits over 3 and 5 yrs (not incl. investment)</strong></td>
<td>3 Year</td>
<td>5 Year</td>
<td>3 Year</td>
<td>5 Year</td>
</tr>
<tr>
<td>$5.0m</td>
<td>$16.5m</td>
<td>$5.6m</td>
<td>$18.2m</td>
<td>$13.9m</td>
</tr>
<tr>
<td><strong>Timeframes for benefit delivery</strong></td>
<td>Within existing resources benefits should be possible within 1 yr, however longer to achieve full potential</td>
<td>Could be delivered within 3-5yrs</td>
<td>Has limited start-up requirements (apart from staff recruitment). Could be delivered in 1-3yrs</td>
<td>Would require a year of re-allocation to LHNs and full achievement over 2-4 year period</td>
</tr>
<tr>
<td>Responsibility</td>
<td>No change</td>
<td>Majority of responsibility to LHNs</td>
<td>Emphasis on SAMI executive leadership</td>
<td></td>
</tr>
</tbody>
</table>
5. Options Assessment
This section provides an assessment of the options identified in the previous section. The assessment includes a qualitative evaluation against a set of criteria that have been developed and used to assess the options and a quantitative evaluation using a comparison of net benefit realisation.

<table>
<thead>
<tr>
<th>Key criteria</th>
<th>Description</th>
</tr>
</thead>
</table>
| Supports delivery of patient centred model of care | Services provided are focussed on the need of the patient, not the needs of the organisation, including:  
- Rapid access to services for emergency, inpatient and outpatient referrals  
- Equity of access to services between sites and modalities  
- Flexibility in appointment times to accommodate patient access issues (eg working hours, parking)  
- Supporting patient choice in location and time of appointments |
| Aligns to the service requirements of the State and local population needs | Delivery of medical imaging for SA Health must support SA Health’s South Australia’s Health Care Plan (2007 – 2016) and the Transforming Health Strategy as it materialises. This includes congruence with the following components:  
- Planning across the system of hospital services, including centralisation of specialist services and more focus for general hospitals  
- Workforce recruitment, retention, teaching and training  
- Quality, safety and access to services  
- Use of IT to support seamless care |
| Delivers sustainable financial efficiency | The total cost (and associated budget implications) for the delivery of the Support Services consistent with the same level of service in a financially sustainable manner. |
| Enhances consistent, seamless, quality service | The provision of high quality medical imaging across each of the hospitals through:  
- consistency of service delivery  
- appropriate specialisation  
- Setting and meeting service standards based on national and international quality benchmarks  
- Strong clinical liaison and a multi-disciplinary approach to care  
- standardised monitoring and performance measurement systems |
| Supports the delivery of teaching, training and research | Maximises opportunities to develop the medical imaging workforce for the future, including a range of training opportunities for all staff groups, a focus on research – including translational research and quality improvement, and support for continuing professional development. |
Options Assessment: the qualitative analysis indicates Option 3 (SAMI improved) and Option 4 (Hybrid) have the best alignment to key criteria

The options have each been analysed and rated based on a four-point scale. This shows that option 3 has the most consistent fit with the agreed criteria, followed by option 4.

<table>
<thead>
<tr>
<th>Key criteria</th>
<th>Option 1: No change</th>
<th>Option 2: LHNs</th>
<th>Option 3: Improve SAMI</th>
<th>Option 4: Hybrid Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supports delivery of patient centred model of care</td>
<td>Slow implementation of improvements to patient choice and access, and little SAMI level patient satisfaction information</td>
<td>Focus at site level but less ability to implement system-wide changes.</td>
<td>Enables SAMI-wide data, reports and implementation of patient centred strategies such as access and choice</td>
<td>Focus at the site level, supported by some central strategies where associated with improved efficiency.</td>
</tr>
<tr>
<td>Aligns to the service requirements of the State and local population needs</td>
<td>Focus on IT enabler, some achievements in workforce and quality. Some ability to enact cross-campus change in service delivery although slow to implement.</td>
<td>IT enabler continues. Less state-wide focus on service change by site</td>
<td>IT benefits and service/site focus achievable, and good ability to apply a system wide approach to service configuration.</td>
<td>IT benefits also achievable and specific strategies implemented. Also supports service change by site through service planning.</td>
</tr>
<tr>
<td>Delivers sustainable financial efficiency</td>
<td>Low investment, lower financial efficiency achievable</td>
<td>Low/moderate level of financial efficiency achievable. Pushes accountability to LHN level in line with other financial measures</td>
<td>Medium investment (in line with original workplan), high level of financial efficiency achievable</td>
<td>Moderate/high level of financial efficiency achievable, but increased coordination costs/risks</td>
</tr>
<tr>
<td>Enhances consistent, seamless, quality service</td>
<td>Some focus on consistency, clinical liaison and quality standards across SAMI, albeit with a gradual rollout process.</td>
<td>Site focus, without a coordinated approach to improve consistency across SA Health</td>
<td>Ability to introduce consistency, quality, specialisation and performance monitoring across SAMI</td>
<td>Some key areas of consistency that drive efficiency supported centrally.</td>
</tr>
<tr>
<td>Supports the delivery of teaching, training and research</td>
<td>Provides opportunities on all sites with some collaboration opportunities</td>
<td>Site focus, relies on state-wide committees and networks for other benefits to be realised</td>
<td>Ability to deliver teaching, training and research highest through cross-site working, training opportunities and spread of translational research.</td>
<td>Site focus, relies on state-wide committees and networks for other benefits to be realised</td>
</tr>
<tr>
<td>Ranking</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
Assessment of the benefits over time shows the difference in delivery for Option 3 and 4. Option 3 provides the greatest and sharpest realisation.

Assessment

As illustrated below, options 3 and 4 provide the greatest total benefit and the rapid delivery over the next 2 to 4 years. This is principally due to the options including investment in dedicated resources to drive the improvements. It could be argued that these resources could be deployed to LHNs, however such a dis-aggregated approach is likely to increase costs and not provide efficiencies in scale and coordination.

Preferred Option

It is recommended that implementation of Option 3 is adopted. This incorporates an initial period focussing on delivering an identified suite of improvements, and progressing in the future to preparation for contestability.

This may change SAMI’s role in the future to focus more on commissioning and service monitoring.

Comparison of estimated benefits cashflow

<table>
<thead>
<tr>
<th>Year</th>
<th>Option 1</th>
<th>Option 2</th>
<th>Option 3</th>
<th>Option 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014/15</td>
<td>210</td>
<td>340</td>
<td>554</td>
<td>-</td>
</tr>
<tr>
<td>2015/16</td>
<td>1,595</td>
<td>1,682</td>
<td>5,479</td>
<td>3,536</td>
</tr>
<tr>
<td>2016/17</td>
<td>3,225</td>
<td>3,622</td>
<td>7,882</td>
<td>5,547</td>
</tr>
<tr>
<td>2017/18</td>
<td>5,319</td>
<td>5,907</td>
<td>7,882</td>
<td>7,341</td>
</tr>
<tr>
<td>2018/19</td>
<td>6,230</td>
<td>6,685</td>
<td>7,882</td>
<td>7,341</td>
</tr>
</tbody>
</table>

Total over 5 years:

- Option 1: $29.6m
- Option 2: $23.7m
- Option 3: $18.2m
- Option 4: $16.5m
6. Preferred Option Implementation Planning
Improving SAMI and investing in the improvement program can commence quickly

**Priority activities**

As highlighted on the following pages, and detailed in Attachment 1, the priority activities should be:

- # 8: Recruitment of key staff, in particular the ED of SAMI and project staff
- # 10: Agreement and implementation of a Delegations of Authority to make clear the respective roles and responsibilities for SAMI
- # 1: establishing the detailed savings strategies for expenditure line as a targeted approach and implementing these at respective sites.

**Performance responsibility**

- A clear performance management plan should be agreed between the ED of SAMI, the CEO of SCSS and relevant SA Health parties to provide clarity on expectations for the delivery of the improvement program
- This plan should then be cascaded down to respective SAMI managers to provide individual measures to achieve the benefits identified.

**Key Risk**

<table>
<thead>
<tr>
<th>Key Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance of improvement</td>
<td>Communication of targets should note that 2 external reviews have now identified similar efficiency benefits, together with benchmark performance and expert review from clinicians in comparable organisations</td>
</tr>
<tr>
<td>targets</td>
<td></td>
</tr>
<tr>
<td>Ability to recruit</td>
<td>SA Health should consider specific target recruits with senior leadership and private sector imaging and management experience. Consider additional investment to recruit high calibre staff</td>
</tr>
<tr>
<td>Ability to implement to the</td>
<td>SA Health will need to make an assessment on the target efficiency levels it seeks to achieve. As demonstrated in the bottom up analysis, there is a clear room for efficiencies and then potential for more depending on the level of appetite for change and management oversight.</td>
</tr>
<tr>
<td>level expected</td>
<td></td>
</tr>
</tbody>
</table>
A strengthened and more accountable governance and investment in the SAMI structure to drive improvements

**Governance and accountability arrangements**

The ability to realise the benefits will require more formalised and integrated governance approach that engages LHN CEOs and hold key individuals to account for performance. Two key elements are necessary:

1. A governing council/Board or similar group – such a group should include LHN CEOs, SA Health and SAMI Management. It should have clear separation of LHN relationships and be focused on the strategic planning and delivery of imaging services across the state as well as progress to implementation of agreed actions from this Review.

2. Service agreements – these agreements should act in a similar manner to contracts in force with private sector providers. They should clearly articulate the services provided to LHNs and the associated costs and performance indicators for SAMI to report on.

The management structure whereby SAMI sits within SCSS, reporting to the CALHN CEO, were considered for change, however there are valid reasons for the current structure (eg: employee benefits and risk management). In future SA Health may wish to consider a separate shared services entity or organisational changes that include direct reporting relationships to the Department, however at this point in time, the focus should be on implementation of foundational resources and capability.

**SAMI structure and investment**

The original recommendations regarding resources and SAMI structure at its establishment have been revised as part of this Review.

It is recommended that SAMI’s revised structure include:

- Executive Director – with capability and experience in the leadership and operational management of Imaging Services
- Clinical Director – potentially a part time role for a senior Radiologist to provide clinical input and oversight to service configuration and performance
- Operations Executive – managing LHN/site operations staff and providing the ‘account management’ role to LHNs in managing the service agreements and performance
- Business/Finance Manager – overseeing the financial management of SAMI, coordinating with SSCS Finance Staff and SA Health Finance staff on key financial matters – most immediately the development of cost schedules and funding model.
- 3 x Business Improvement Project Managers – these staff should be time limited to provide the immediate capacity to support roll out of implementation activities. They should combine strong project management skills with business improvement/change management experience.

Consideration should also be given to a dedicated Human Resource position, whose role would be to support workforce changes, industrial relations guidance and planning expertise. In addition the existing Administration role should be continued.

Allocation should be made for clinical roles that may change as improvements are rolled out – in particular modality heads.

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Other state wide considerations

There are a number of systemic matters, outside the detailed scope of this review or SAMI’s remit, which SA Health will need to consider further. They include:

- Rights of Private Practice (RoPP) agreements – as an enabler of more systematic, cross site working arrangements, which applies to all medical professions
- Implementation of the ESMI and other support ICT solutions.
SAMI structure and investment

- An investment of $0.5m (as detailed on page 62) has been estimated to enhance SAMI’s capacity to implement the recommended improvement activities. This is in addition to existing resources deployed across sites, which could be improved and be more productive with a clear management structure and action plan for implementation.

- The investment required for new roles (highlighted in yellow) should adapt over time in line with SAMI’s needs. For example the investment might be used for short term contract or temporary roles, before transitioning to more permanent roles upon completion of the improvement actions.

- An indicative approach to the improvement managers would require one to focus on clinical process changes, preferably with a radiological background, one to focus on financial, reporting and governance changes, and a third to focus on workforce strategies.

- Other investments will have been estimated at $0.77m p.a. for additional clinical time and expenditure for revenue generating activity

- The net benefit of the investment and implementation plan is $24.6m.

Figure: Revised SAMI structure and responsibility allocation
The roadmap prioritises the deployment of new resources, the transition planning of the new RAH and the delivery of targeted site specific savings initiatives.
Appendices

1. Assessment of progress to SA Health’s Response to the SA Imaging Review 76
2. Details and assumptions of the data analysis 84
3. Financial Performance and benchmarking detailed analysis 93
Appendix 1

Assessment of progress to SA Health’s Response to the SA Imaging Review
Agreed recommendations following the EY report

<table>
<thead>
<tr>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governance</td>
</tr>
<tr>
<td>1. Established with consistent approach to reporting as for other state-wide services. SA Imaging Executive Director to report to the CEO of DH through the ED Operations Division.</td>
</tr>
<tr>
<td>2. SA Health should progress to appoint an Executive Director SA Imaging immediately. Should be a practicing radiologist/ nuclear medicine physician and retain a clinical load.</td>
</tr>
<tr>
<td>3. SA Health should agree the draft structure; determine the roles and responsibilities of the ED and other corporate roles and appointments made as soon as practicable.</td>
</tr>
<tr>
<td>4. SA Health should establish a Referral Advisory Committee (RAC).</td>
</tr>
<tr>
<td>5. SA Imaging should develop a strategic vision with underpinning values and value statements.</td>
</tr>
<tr>
<td>6. SA Imaging should allocate current radiologists formal referrer relationship management responsibilities as well as the representative at specialty clinical meetings.</td>
</tr>
<tr>
<td>7. SA Health and SA Imaging should agree Service Level Agreement (SLA) templates and performance metrics.</td>
</tr>
<tr>
<td>8. SA Imaging should develop tools to monitor and maintain performance metrics after completing a data quality exercise and in line with ICT platform for RIS/PACS/Voice.</td>
</tr>
<tr>
<td>9. SA Imaging should work with the Department of Health to ensure performance measures can be developed and integrated into the DH framework.</td>
</tr>
<tr>
<td>Services model/teaching, training and research/safety and quality</td>
</tr>
<tr>
<td>10. SA Health should develop a detailed business case/risk assessment to determine the benefits/viability of bringing services for CHSA and smaller metro sites ‘in house’.</td>
</tr>
<tr>
<td>11. SA Imaging should appoint a central Director of Training (DOT) Coordinator</td>
</tr>
<tr>
<td>12. SA Health should review the allocation of quality and safety responsibilities with a view to developing strategies for sharing resources, procedures and protocols across sites.</td>
</tr>
<tr>
<td>13. The consolidation of experts to co-ordinate and manage the radiation safety and protection of patients to be further explored and discussed. In addition succession planning across professional groups</td>
</tr>
<tr>
<td>14. SA Health should conduct an initial data audit to investigate the key drivers of call backs to inform the development of a proposed future state roster.</td>
</tr>
<tr>
<td>15. SA Health should develop standard reporting for on call costs and include within audit programs</td>
</tr>
</tbody>
</table>
### Agreed recommendations following the EY report

<table>
<thead>
<tr>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Workflow</strong></td>
</tr>
<tr>
<td>16. SA Imaging should form a resource from the skill base of its radiologists/nuclear medicine physicians to guide an “appropriateness of ordering” agenda across SA Health including provision of advice on electronic decision support systems. This resource will require protected time and access to research support and travel opportunities (as appropriate) to progress the agenda.</td>
</tr>
<tr>
<td>17. SA Imaging should have an active involvement in the introduction of electronic order entry under the SA ePAS initiative to ensure that the requirements of the service are reflected in the ICT application implementation</td>
</tr>
<tr>
<td>18. SA Imaging should act as sponsor for the project to embed electronic decision support functionality into the order entry application.</td>
</tr>
<tr>
<td>19. SA Imaging should establish a 24x7 system by which one or more radiologists/nuclear medicine physicians (including senior registrars for after hours support) are assigned as referrer support to assist with ensuring the appropriateness of image requests and to act as second level support to the electronic ordering system. This service should be offered state-wide, but as a virtual service so that it does not require replication at all campuses.</td>
</tr>
<tr>
<td>20. SA Imaging should develop an appropriateness feedback system within their reporting functionality to advise referring clinicians on a case-by-case basis where the examination requested was not appropriate or unnecessary.</td>
</tr>
<tr>
<td>21. SA Imaging should also design an education program available to training medical staff and consultants, to assist with understanding the “appropriateness” feedback planned for inclusion in the reporting process.</td>
</tr>
<tr>
<td>22. SA Health should retain existing booking arrangements until SA Imaging has unified RIS/PACS/Voice infrastructure in place.</td>
</tr>
<tr>
<td>23. SA Imaging should fast-track installation of unified RIS/PACS/Voice infrastructure across. SA Health should develop standard field use and code sets for existing RIS/PACS platforms, develop appropriate documentation to support standards, develop and undertake booking/reception staff training, and establish processes of continuous monitoring to ensure consistency in data entry and completeness of data recorded.</td>
</tr>
<tr>
<td>24. When ICT infrastructure is established, SA Imaging Executive should determine the workflow model they wish to adopt for co-ordinated bookings and implement as appropriate.</td>
</tr>
<tr>
<td>25. SA Imaging should retain existing arrangements until SA Imaging has unified ICT infrastructure in place to support enterprise wide billing on a uniform platform and with uniform procedures and policies.</td>
</tr>
<tr>
<td>26. SA Imaging should co-locate billing staff into a centralised service and establish the ICT infrastructure and phone services needed to operate as a single service.</td>
</tr>
<tr>
<td>27. SA Imaging Executive should design a process of second reads within the service based on a 1% sample of blind double reads feeding into the quality and safety management structures proposed elsewhere in this document.</td>
</tr>
</tbody>
</table>
### Agreed recommendations following the EY report

<table>
<thead>
<tr>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>28. SA Imaging Executive should immediately establish a working group to define the operating rules for shared work lists across SA Imaging sites, including after hours operating rules to ensure appropriate supervision is available to registrars reporting after hours.</td>
</tr>
<tr>
<td>29. SA Imaging Executive should define an urgency taxonomy to apply to image requests from referring clinicians and establish protocols to underpin the scripting of these protocols into the work list software of the RIS/PACS/Voice environment.</td>
</tr>
<tr>
<td>30. SA Imaging should develop business rules to be applied within shared worklist software including:</td>
</tr>
<tr>
<td>a) Private patients be reported by “local” radiologists/nuclear medicine physicians pending agreement on a single private practice agreement across the service.</td>
</tr>
<tr>
<td>b) Unless urgency criteria dominate, campus centricity rules apply to the worklists such that local reporting takes precedence over remote reporting.</td>
</tr>
<tr>
<td>c) Specialist reporting is facilitated within the worklists through the appropriate classification of examinations, but that the referring campuses not be compromised by sending all work of a particular nature for “external” reporting.</td>
</tr>
<tr>
<td>d) A mechanism be established such that radiologists who have reported previous studies take precedence in the subsequent reporting of the same patient examinations.</td>
</tr>
<tr>
<td>e) A similar mechanism and supporting processes be established where a referring clinician has made personal contact with a particular radiologist/nuclear medicine physician over a particular patient and the best interests of all parties are preserved by continuity of reporting radiologist going forward.</td>
</tr>
<tr>
<td>31. SA Imaging Executive should review the deployment and utilisation (including consideration of case urgency and transfer capacity) of interventional radiology services across South Australia and facilitate development of a plan to rationalise the service to appropriately meet patient needs.</td>
</tr>
<tr>
<td>32. SA Imaging should consider the provision of interventional radiology in the context of agreed service delineation of hospitals in line with the SA Health Care Plan and the referral relationships embedded in that plan.</td>
</tr>
<tr>
<td>33. SA Imaging should assess the feasibility of a reduced footprint for interventional services and the implications of that reduction, particularly in addressing the service provided at the WCH and its viability in the future. CYWHS must have significant input into this process.</td>
</tr>
<tr>
<td>34. SA Imaging should also develop protocols and accountabilities governing the organisation of afterhours services and recalls ensuring that appropriate clinical care is being delivered commensurate with patient requirements.</td>
</tr>
</tbody>
</table>
### Agreed recommendations following the EY report

<table>
<thead>
<tr>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>People and organisation</strong></td>
</tr>
<tr>
<td>35. SA Health should determine staffing numbers and targeted efficiencies based upon workload and effort required to deliver projected activity aligned with revised roles and responsibilities within the new SA Imaging structure. A detailed activity audit is required in consultation with HR/IR processes.</td>
</tr>
<tr>
<td>36. An implementation plan for the future workforce model should be developed and transition plans and strategies developed for impacted staff by SA Health.</td>
</tr>
<tr>
<td>37. SA Health should develop proposed rosters across SA Imaging and discuss through EA negotiations to ensure rosters are aligned with HR/IR principles.</td>
</tr>
<tr>
<td>38. In the structure implementation SA Imaging should define responsibility for HR processes and other business management roles and clearly communicate to staff whose roles have embedded HR activities within them.</td>
</tr>
<tr>
<td><strong>Assets</strong></td>
</tr>
<tr>
<td>39. SA Health should conduct a detailed asset audit to ensure a complete listing of statewide medical imaging assets is registered. There may be synergies in conducting this as part of the BME state-wide service initiative.</td>
</tr>
<tr>
<td>40. SA Health should establish a central and common asset register in line with procurement, finance and BME standards and processes which utilise standard asset classifications and categorisation (capital taxonomy) and is linked to key user groups of the each SA Imaging campus including detail of equipment location and purpose.</td>
</tr>
<tr>
<td>41. SA Health should determine assets that require upgrade or replacement to manage any financial risk associated with the introduction of capital sensitivity rules by the Commonwealth.</td>
</tr>
<tr>
<td>42. SA Imaging should establish formal procurement, contract management, capital monitoring and planning processes in line with broader SA Health frameworks.</td>
</tr>
<tr>
<td>43. SA Imaging should determine an initial strategic asset management plan in conjunction with hospitals for the next 5 year period as a minimum with processes to regularly reassess the condition and life expectancy of equipment through a standard assessment system.</td>
</tr>
<tr>
<td>44. SA Imaging should consider options to support the introduction of improved information technology systems to allow the appropriate capture, monitoring and management of asset and equipment information including contract details.</td>
</tr>
<tr>
<td>45. SA Imaging should establish processes and reporting tools to monitor utilisation levels of major equipment items. Where utilisation is less than optimal, options such as sharing/transferring to where service need is highest be considered as part of the capital planning process.</td>
</tr>
</tbody>
</table>
## Agreed recommendations following the EY report

### Recommendation

<table>
<thead>
<tr>
<th>ICT</th>
</tr>
</thead>
<tbody>
<tr>
<td>46. SA Health should install a unified RIS/PACS/Voice environment across SA Imaging in the immediate future.</td>
</tr>
<tr>
<td>47. Implementation may be staggered across the campuses of SA Imaging with priority given to sites that have no or unsustainable coverage in the first instance.</td>
</tr>
<tr>
<td>48. It is recommended that the roll out of the RIS/PACS/VR be prioritised balancing site needs and vendor selection.</td>
</tr>
<tr>
<td>49. A taxonomy of medical imaging services delivered through SA Imaging should be developed based on CMBS (so that it is mappable to systems in use in other settings to facilitate benchmarking etc.) be developed.</td>
</tr>
<tr>
<td>50. SA Health should develop a formal project to record the current field use, code sets and data processes across the metropolitan in-sourced medical imaging departments to be initiated immediately to harmonise the data collection processes and ensure that there is consistency in the design, policies and practices of all sites prior to 1st July 2011. This is an essential step in preparing for the implementation of a single state-wide RIS in the immediate future. It is understood SA Health have initiated a project to define common code sets.</td>
</tr>
<tr>
<td>51. In selecting the RIS/PACS/Voice infrastructure for SA Imaging, the capacity to routinely and consistently collect data essential to monitoring the services value and responsiveness for referring clinicians is inherent in the design and functionality. Where some of these metrics are recorded in other clinical applications, the SA Imaging infrastructure should integrate with those systems to remove the need for double entry of fields.</td>
</tr>
</tbody>
</table>

### Rights of Private Practice (RoPP)

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>52. In the first instance, SA Imaging should roll over existing RoPP agreements to the new state-wide service with a view that at the time of renegotiation opportunities for a standardised approach are considered.</td>
</tr>
<tr>
<td>53. Excess funds should be distributed to SA Imaging with agreed processes regarding the allocation of funds providing the Executive Director of SA Imaging with discretion of appropriate utilisation between operational and capital funding.</td>
</tr>
<tr>
<td>54. SA Imaging should design allocation processes prior to negotiations along with explanations regarding the proposed funding model for SA Imaging so that clinicians understand how funds will be utilised to support the medical and nuclear imaging services.</td>
</tr>
<tr>
<td>55. SA Health should establish consistent processes to support the management and administration of private practice arrangements. The design should consider support required for other state-wide services.</td>
</tr>
<tr>
<td>56. SA Health should transfer funds from current non-operating accounts into the SA Imaging structure.</td>
</tr>
<tr>
<td>57. SA Imaging should establish governance processes to determine access to non-operating funds.</td>
</tr>
</tbody>
</table>
## Agreed recommendations following the EY report

<table>
<thead>
<tr>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Budget processes</strong></td>
</tr>
<tr>
<td>58. SA Health finance should develop a detailed budget process to determine how statewide services to be implemented from 1st July 2011 will be budgeted for in the coming year, how recharge arrangements may be implemented and how budgets will be reallocated from 1st July 2011.</td>
</tr>
<tr>
<td>59. The financial structures underpinning the budget process should be established in order for budgets to be reassigned for SA Imaging. Ownership and accountability for budget management under the new structure will require clear assignment and communication throughout this process from SA Health.</td>
</tr>
<tr>
<td>60. SA Imaging and SA Health should develop reporting tools and mechanisms to monitor budgets appropriately and support campus managers monitor performance against budget and activity targets. It is anticipated that many of the tools required will be available but may require assignment in terms of report and information users.</td>
</tr>
<tr>
<td>61. SA Imaging should design models and business rules for recharging internally to share costs across campuses or modalities. It is proposed that recharging (i.e. notional assignment of shared resource costs) occurs on a quarterly basis to ensure that this does not become an administrative burden.</td>
</tr>
<tr>
<td>62. SA Imaging should charge hospitals and health services for the medical imaging they request using CMBS as the taxonomy underpinning the payment model. The percentage of CMBS to be adopted to set the price points needs to be reviewed by factoring total operating costs with the aggregate CMBS value of the work ordered historically, however, 85% represents an appropriate market point and sustains the compatibility with SA Pathology. Details of the model to be will be worked through with Local Health Networks.</td>
</tr>
<tr>
<td>63. SA Imaging should design pricing models and processes for billing referrers for services provided that are not billable through Medicare or other sources. This may also require the development of appropriate SLA’s and KPI’s to ensure that the provision of services are governed appropriately and the terms of service provision are agreed between both parties.</td>
</tr>
<tr>
<td><strong>Cost centre structures</strong></td>
</tr>
<tr>
<td>64. A cost centre structure for SA Imaging should be finalised and determined by SA Health by 1st July 2011. The proposed structure would allow expenditure to be reported and monitored at the SA Imaging level, across various campuses or from a holistic view of modalities across the state.</td>
</tr>
<tr>
<td>65. SA Health should define a data migration process to govern the transfer of existing cost centres into the new structure. Mappings should allow historical comparatives of prior year data for each medical imaging campus.</td>
</tr>
<tr>
<td>66. SA Health and SA Imaging should determine the ownership, management and accountability for cost centres and associated delegations of authority to spend against cost centres.</td>
</tr>
</tbody>
</table>
## Agreed recommendations following the EY report

<table>
<thead>
<tr>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non-operating funds</strong></td>
</tr>
<tr>
<td>67. SA Health should determine the consultation process and strategy for rolling current non-operating funds into SA Imaging including whether current purposes are to be maintained (e.g. for research or other purpose). This may require HR/IR consultation due to the links with RoPP agreements.</td>
</tr>
<tr>
<td>68. SA Imaging should establish governance processes, delegations and reporting requirements for application and administration of non-operating funds.</td>
</tr>
<tr>
<td><strong>Revenue opportunities</strong></td>
</tr>
<tr>
<td>69. SA Health should conduct a sample audit of the data records across FMC, RAH, WCH and TQEH to conduct root cause analysis and identify the underlying reasons for assignment of non billable classifications to this data set.</td>
</tr>
<tr>
<td>70. SA Health should determine their policy position in relation to the National Health Care Act and issue formal communications regarding billing processes to be adopted. Depending upon the outcomes of the root cause analysis there may be process improvement opportunities to be identified. The audit should identify these areas and seek to determine improvement initiatives.</td>
</tr>
<tr>
<td>71. SA Imaging should define processes for requests, data standards and data definitions to ensure consistency in application of billing processes across the system.</td>
</tr>
</tbody>
</table>
Appendix 2

Details and assumptions of the data analysis
Financial assumptions and limitations

Financial data

SA Health provided KPMG financial data for the following financial years: 2010/11, 2011/12, 2012/13 and 2013/14 (April YTD). Data included recharges (within individual sites and across SAMI sites), and GFS and non-GFS data. KPMG’s approach to these individual components are provided below.

Recharges

Recharges that involve Radiology departments ‘charging’ other departments within their hospital were excluded from the Total Expenses figures used throughout the report. KPMG cross confirmed figures with SCSS Finance personnel. While the majority of costs are in RAH and LMH, there were some associated with CHSA and FMC. Internal recharges, associated with staff working across different sites, were included in the analysis. The totals, incorporating both revenue and expenditure, are reported in the table below. These figures reconcile to SA Health financial reporting.

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAH</td>
<td>355,247</td>
<td>482,785</td>
<td>619,893</td>
</tr>
<tr>
<td>TQEIH</td>
<td>85,381</td>
<td>-55,946</td>
<td>-75,003</td>
</tr>
<tr>
<td>CHSA</td>
<td>2,996</td>
<td>547,821</td>
<td>338,668</td>
</tr>
<tr>
<td>LMH</td>
<td>274,547</td>
<td>-129,487</td>
<td>-219,750</td>
</tr>
<tr>
<td>FMC</td>
<td>371,841</td>
<td>-210,845</td>
<td>-714,477</td>
</tr>
<tr>
<td>RGH</td>
<td>300</td>
<td>-25,838</td>
<td>62,843</td>
</tr>
<tr>
<td>WCH</td>
<td>171,780</td>
<td>117,865</td>
<td>394,407</td>
</tr>
<tr>
<td>Total</td>
<td>1,262,092</td>
<td>726,354</td>
<td>406,580</td>
</tr>
</tbody>
</table>

Prorated data for 2013/14 (indicated by * throughout graphs)

As the data was April YTD the approach to prorating 2013/14 YTD figures was to calculate a daily rate and multiply this figure by 365 to arrive at an estimated 2013/14 YTD.
Financial assumptions and limitations

Normalised data
The proportion of SAMI-related revenue is inconsistent between 2012 - 2014 (prorated) financial years. The significant decrease in RAH revenue is related to grant funding for RAH for ‘Appropriations for capital purposes’ from SA Health. These figures were:

2012 - $1.9M
2013 - $14M
2014 - $2.7M

Depreciation charges at RAH were also excluded from the total expenses (GFS) and reclassified to Non GFS, the figures were:

2013 - $1.0M
2014 - $1.2M

Salary & Wages
When using total salary and wages in any graphs we have excluded super as this is not broken down by classification.

Consumables
When calculating average cost per weighted activity prosthetics were excluded and drugs were included in the consumables calculation
CMBS modelling approach

In order to compare the total cost of SAMI, a proxy ‘efficient cost’ indicator needed to be derived. The CMBS rate was used on 2013-14 activity to calculate a ‘deemed revenue’ figure as a proxy for expenditure. This was then compared to total SAMI expenditure as an indicator of the actual rate of CMBS. While indicative only, together with industry knowledge, the rate of performance relative to the CMBS suggests that there is opportunity for improvement. The process used in this analysis is described below.

• Exam records were cleaned according to the procedure description provided by SAMI. Subsequent CMBS analysis excluded records that the cleaning procedure classified as:
  – Not performed;
  – Incomplete;
  – External image;
  – Report;
  – Failed exam;
  – Testing;
  – Copy film;
  – Second opinion;
  – Consult;
  – Outside film; or
  – Meeting.

• Remaining records were assigned a CMBS dollar value based on the CMBS items listed on each record and the corresponding items’ 100% scheduled fees in the April 2014 Medicare Benefits Schedule.

• Each record was assigned a relative value equal to its CMBS dollar value divided by the average CMBS dollar value per record for all eight sites in 2013-14. This ensured that the average relative value units per record for 2013-14 equalled 1.

• A number of records were missing the CMBS items’ data and so couldn’t be assigned relative values in this way. These records were assigned default relative values as follows:
  • For all modalities except Cardio, records were assigned the average relative value of the non-missing records for that modality at the same site and for the same financial year.
  • For Cardio, modality records were assigned the average relative value for Cardio records at LMH in the corresponding financial year. Note that only LMH, FMC and TQEH had any Cardio records and CMBS data were missing for all Cardio records at both FMC and TQEH.
Benchmarking assumptions and limitations

Benchmarking of key service areas has been undertaken to identify if there are opportunities for benefits or standardisation to be achieved. It should be noted that each hospital has unique characteristics and as such the use of benchmarks is not an exact science.

The benchmarking analysis provides a strong indication of where there are potential opportunities and a range for the benchmark has been determined based on the available data. Whilst we have made an attempt to adjust for the specific site differences in applying each of the benchmarks, there is a risk that some of our assumptions may prove to be incorrect.

Detailed benchmarking data has been difficult to come by and as a result a certain amount of assumptions have had to be made. Part of the public hospital peer data available was 2011-12, where this was the case a Health CPI uplift was applied to any dollar amounts, in order to benchmark with the 2012-13 numbers. Also the categories of expenditure were quite broad therefore the 3 categories we applied for benchmarking were total expenses, total labour and total non-labour costs. We would have liked to of applied more benchmarking around consumables but unfortunately this was not possible.

Similarly the exam/test numbers that we were able to source did not have weightings applied, as a result all activity numbers in the benchmarks are un-weighted. Weighted numbers for the SAMI hospitals can be found in the site specific data in Appendix 3.

The red line on the benchmarking graphs are equal to the high public benchmark and the purple line equal to the low public benchmark. We have utilised the 25th percentile and 75th percentile categories for the low and high values of the range respectively.
Activity data analysis assumptions

Activity analyses have been carried out using data from Kestral, provided to KPMG by SAMI. Data were received for slightly different periods and for eight sites, as follow:

- July 2011 to May 2014 for Flinders Medical Centre (FMC);
- July 2011 to April 2014 for Lyell McEwin Health Service (LMH);
- July 2011 to May 2014 for Murray Bridge Hospital (MBH);
- July 2011 to April 2014 for Royal Adelaide Hospital (RAH);
- July 2011 to May 2014 for Repatriation General Hospital (RGH);
- July 2011 to April 2014 for Riverland Health Service (Riverland);
- July 2011 to April 2014 for The Queen Elizabeth Hospital (TQEH); and
- July 2011 to May 2014 for Women’s and Children’s Hospital (WCH).

Each record of data received was counted as one exam. Forecast full year activity for the 2013-14 financial year was extrapolated from year to date (YTD) activity for 2013-14. This was done separately for each hospital as follows:

- multiplying by 12 and dividing by 11 at FMC, Murray Bridge, RGH and WCH; and
- multiplying by 12 and dividing by 10 at Lyell McEwin, RAH, Riverland and TQEH.

These scaling factors should provide reliable forecasts of full year activity for trend analysis and overall performance measurement.

To analyse the complexity of the raw activity, the concept of a weighted exam was developed. This was done on a record by record basis and the weight for a given record was calculated as follows:

- identify the MBS items contained within the record;
- records without an identifiable MBS item are excluded (many were coded as 'MISSING');
- obtain the scheduled MBS fee (100%) for each item in the record, using the April 2014 MBS;
Activity data analysis assumptions

- add these amounts together to calculate a total MBS fee for the record;
- calculate the average MBS fee per record for all eight sites in 2013-14; and
- divide the record’s total MBS fee by that average.

The resulting weights average 1.0 across all SAMI records containing identifiable MBS items in 2013-14 and they provide a consistent means for assessing relative workload changes over time. The main limitation is that not all records were able to be included for this analysis, due to the inability to identify suitable MBS items for some records.

The following table summarises the proportions of records included in the weighted analysis by site and by modality. Highlighted cells are those where coverage is less than 90%. The most concerning of these are Angiography at RAH, MRI at FMC, and the exclusion of all Cardio activity at FMC and TQE. These coverage issues primarily affected Inpatient and Emergency activity and were less marked for Outpatient activity.

For this report, no correction has been made for these coverage issues and the weighted activity results are therefore indicative.

Table 18: Proportion of SAMI records with identifiable MBS items and included in weighted analysis, by modality and site

<table>
<thead>
<tr>
<th>Modality</th>
<th>FMC</th>
<th>LMH</th>
<th>MBH</th>
<th>RAH</th>
<th>RGH</th>
<th>Riverland</th>
<th>TQE</th>
<th>WCH</th>
<th>Eight sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angio</td>
<td>89.6%</td>
<td>99.8%</td>
<td>N/A</td>
<td>61.3%</td>
<td>97.9%</td>
<td>N/A</td>
<td>96.4%</td>
<td>85.7%</td>
<td>75.3%</td>
</tr>
<tr>
<td>CT</td>
<td>93.7%</td>
<td>95.0%</td>
<td>100.0%</td>
<td>97.0%</td>
<td>94.8%</td>
<td>100.0%</td>
<td>94.1%</td>
<td>98.6%</td>
<td>95.7%</td>
</tr>
<tr>
<td>Cardio</td>
<td>0.0%</td>
<td>99.3%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>0.0%</td>
<td>N/A</td>
<td>39.8%</td>
</tr>
<tr>
<td>Cephs</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>98.2%</td>
</tr>
<tr>
<td>Fluoro</td>
<td>93.7%</td>
<td>88.3%</td>
<td>N/A</td>
<td>96.2%</td>
<td>98.6%</td>
<td>100.0%</td>
<td>95.9%</td>
<td>98.6%</td>
<td>96.7%</td>
</tr>
<tr>
<td>General</td>
<td>97.6%</td>
<td>99.1%</td>
<td>100.0%</td>
<td>91.2%</td>
<td>98.9%</td>
<td>100.0%</td>
<td>98.5%</td>
<td>99.4%</td>
<td>96.4%</td>
</tr>
<tr>
<td>MRI</td>
<td>69.0%</td>
<td>92.8%</td>
<td>N/A</td>
<td>85.4%</td>
<td>N/A</td>
<td>N/A</td>
<td>93.2%</td>
<td>88.8%</td>
<td>81.5%</td>
</tr>
</tbody>
</table>
### Activity data analysis assumptions

<table>
<thead>
<tr>
<th>Modality</th>
<th>FMC</th>
<th>LMH</th>
<th>MBH</th>
<th>RAH</th>
<th>RGH</th>
<th>Riverland</th>
<th>TQEH</th>
<th>WCH</th>
<th>Eight sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammo</td>
<td>93.1%</td>
<td>93.2%</td>
<td>N/A</td>
<td>98.7%</td>
<td>N/A</td>
<td>100.0%</td>
<td>95.0%</td>
<td>N/A</td>
<td>94.6%</td>
</tr>
<tr>
<td>Mobile</td>
<td>99.1%</td>
<td>N/A</td>
<td>N/A</td>
<td>96.4%</td>
<td>100.0%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>98.0%</td>
</tr>
<tr>
<td>NucMed</td>
<td>84.9%</td>
<td>96.0%</td>
<td>N/A</td>
<td>98.6%</td>
<td>100.0%</td>
<td>N/A</td>
<td>89.2%</td>
<td>94.4%</td>
<td>94.9%</td>
</tr>
<tr>
<td>Ultrasound</td>
<td>89.0%</td>
<td>91.5%</td>
<td>100.0%</td>
<td>90.4%</td>
<td>98.6%</td>
<td>100.0%</td>
<td>91.4%</td>
<td>94.8%</td>
<td>93.1%</td>
</tr>
<tr>
<td>All modalities</td>
<td>91.0%</td>
<td>96.6%</td>
<td>100.0%</td>
<td>91.4%</td>
<td>98.3%</td>
<td>100.0%</td>
<td>94.0%</td>
<td>96.9%</td>
<td>93.7%</td>
</tr>
</tbody>
</table>
Exam time analysis assumptions

The following time fields were available and were used to determine elapsed times from referral receipt to exam and to report:

- RECDATE and RECTIME for referral receipt date and time;
- EDATE and ETIME for exam date and time;
- IDATE and ITIME for interim report date and time; and
- ADATE and ATIME for authorised report date and time.

Some sites issue interim reports and others do not. The table below makes it clear that FMC, Murray Bridge and Riverland do not use interim reporting while other sites use it to varying extents. In light of these differences in practice, the analysis used the following definition of exam to report time:

- The number of hours from exam date and time to authorised report date and time for FMC, Murray Bridge and Riverland.
- The number of hours from exam date and time to interim report date and time where there is an interim report date and an interim report time in Kestral, for Lyell McEwin, RAH, RGH, TQEH and WCH.
- The number of hours from exam date and time to authorised report date and time where there is either NO interim report date or NO interim report time in Kestral, for Lyell McEwin, RAH, RGH, TQEH and WCH.

Proportion of inpatient cases for which interim report times are available in Kestral (2013-14 YTD)

<table>
<thead>
<tr>
<th>Site</th>
<th>% with interim reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMC</td>
<td>&lt;0.1%</td>
</tr>
<tr>
<td>LMH</td>
<td>79.8%</td>
</tr>
<tr>
<td>MBH</td>
<td>Nil</td>
</tr>
<tr>
<td>RAH</td>
<td>87.9%</td>
</tr>
<tr>
<td>RGH</td>
<td>45.5%</td>
</tr>
<tr>
<td>Riverland</td>
<td>1.8%</td>
</tr>
<tr>
<td>TQEH</td>
<td>85.7%</td>
</tr>
<tr>
<td>WCH</td>
<td>95.9%</td>
</tr>
</tbody>
</table>

* Interpreted as there being an interim report date and an interim report time in the Kestral data.
Appendix 3

Financial Performance and benchmarking
detailed analysis
S&W costs – SAMI

- S&W have risen by $4.7m (7%) over the three years, with a CAGR of 3%

<table>
<thead>
<tr>
<th>Site</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>3-year Growth</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries and Wages - Medical</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Officers</td>
<td>25,003,597</td>
<td>24,756,914</td>
<td>27,935,772</td>
<td>12%</td>
<td>6%</td>
</tr>
<tr>
<td>Salaries and Wages - Nursing</td>
<td>6,500,488</td>
<td>7,026,150</td>
<td>7,485,604</td>
<td>15%</td>
<td>7%</td>
</tr>
<tr>
<td>Salaries and Wages - Salaried Employees</td>
<td>39,835,544</td>
<td>39,870,927</td>
<td>40,582,704</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>Grand Total</td>
<td>71,339,628</td>
<td>71,653,991</td>
<td>76,004,080</td>
<td>7%</td>
<td>3%</td>
</tr>
</tbody>
</table>
Financial performance – Cost drivers

S&W costs – Site

- S&W have risen by $4.7m (7%) over the three years, with a CAGR of 3%

<table>
<thead>
<tr>
<th>Site</th>
<th>Salaries and Wages - Medical Officers</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>3-year Growth</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAH</td>
<td>Salaries and Wages - Medical Officers</td>
<td>7,775,169</td>
<td>7,455,878</td>
<td>8,706,163</td>
<td>12%</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>Salaries and Wages - Nursing</td>
<td>2,452,769</td>
<td>2,554,620</td>
<td>2,751,832</td>
<td>12%</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>Salaries and Wages - Salaried Employees</td>
<td>10,762,497</td>
<td>11,287,092</td>
<td>11,401,575</td>
<td>6%</td>
<td>3%</td>
</tr>
<tr>
<td>TQEH</td>
<td>Salaries and Wages - Medical Officers</td>
<td>4,640,514</td>
<td>4,511,794</td>
<td>4,745,043</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>Salaries and Wages - Nursing</td>
<td>1,230,324</td>
<td>1,394,326</td>
<td>1,426,759</td>
<td>16%</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>Salaries and Wages - Salaried Employees</td>
<td>5,980,249</td>
<td>5,840,434</td>
<td>5,976,126</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>FMC</td>
<td>Salaries and Wages - Medical Officers</td>
<td>7,037,618</td>
<td>7,012,767</td>
<td>7,675,904</td>
<td>9%</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>Salaries and Wages - Nursing</td>
<td>989,675</td>
<td>1,108,210</td>
<td>1,226,530</td>
<td>24%</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>Salaries and Wages - Salaried Employees</td>
<td>8,902,338</td>
<td>8,886,116</td>
<td>8,970,913</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>RGH</td>
<td>Salaries and Wages - Medical Officers</td>
<td>443,068</td>
<td>517,913</td>
<td>545,401</td>
<td>23%</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>Salaries and Wages - Nursing</td>
<td>2,552,384</td>
<td>2,832,120</td>
<td>2,858,682</td>
<td>12%</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>Salaries and Wages - Salaried Employees</td>
<td>2,720,453</td>
<td>2,960,489</td>
<td>3,312,546</td>
<td>22%</td>
<td>10%</td>
</tr>
<tr>
<td>LMH</td>
<td>Salaries and Wages - Medical Officers</td>
<td>716,978</td>
<td>638,110</td>
<td>732,086</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>Salaries and Wages - Nursing</td>
<td>5,401,747</td>
<td>4,577,602</td>
<td>4,715,029</td>
<td>-13%</td>
<td>-7%</td>
</tr>
<tr>
<td>Country</td>
<td>Salaries and Wages - Medical Officers</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Salaries and Wages - Nursing</td>
<td>86,118</td>
<td>131,975</td>
<td>138,999</td>
<td>61%</td>
<td>27%</td>
</tr>
<tr>
<td></td>
<td>Salaries and Wages - Salaried Employees</td>
<td>2,588,977</td>
<td>2,439,606</td>
<td>2,715,349</td>
<td>5%</td>
<td>2%</td>
</tr>
<tr>
<td>WCH</td>
<td>Salaries and Wages - Medical Officers</td>
<td>1,881,443</td>
<td>1,959,643</td>
<td>2,199,409</td>
<td>17%</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>Salaries and Wages - Nursing</td>
<td>581,556</td>
<td>680,998</td>
<td>663,996</td>
<td>14%</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>Salaries and Wages - Salaried Employees</td>
<td>3,647,352</td>
<td>4,007,957</td>
<td>3,945,031</td>
<td>8%</td>
<td>4%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>71,339,628</td>
<td>71,653,991</td>
<td>76,004,080</td>
<td>7%</td>
<td>3%</td>
</tr>
</tbody>
</table>
Medical S&W costs – Site

- Medical S&W have risen by $2.9m (12%) over the three years, with a CAGR of 6%

<table>
<thead>
<tr>
<th>Site</th>
<th>S&amp;W and Allowances</th>
<th>Penalties</th>
<th>Overtime</th>
<th>Sick leave</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>3-year Growth</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAH</td>
<td>5,976,238</td>
<td>111,383</td>
<td>1,600,895</td>
<td>86,653</td>
<td>5,773,591</td>
<td>100,374</td>
<td>1,496,723</td>
<td>85,189</td>
<td>6,757,093</td>
</tr>
<tr>
<td>TQEH</td>
<td>3,964,760</td>
<td>56,256</td>
<td>540,465</td>
<td>79,032</td>
<td>3,955,648</td>
<td>44,532</td>
<td>447,569</td>
<td>64,045</td>
<td>4,176,566</td>
</tr>
<tr>
<td>LMH</td>
<td>1,984,378</td>
<td>9,109</td>
<td>714,763</td>
<td>12,203</td>
<td>2,025,453</td>
<td>1</td>
<td>920,879</td>
<td>14,158</td>
<td>2,349,040</td>
</tr>
<tr>
<td>FMC</td>
<td>6,081,074</td>
<td>-</td>
<td>885,466</td>
<td>71,077</td>
<td>6,050,505</td>
<td>-</td>
<td>887,935</td>
<td>14,327</td>
<td>6,761,012</td>
</tr>
<tr>
<td>RGH</td>
<td>901,654</td>
<td>-</td>
<td>35,817</td>
<td>10,929</td>
<td>809,628</td>
<td>-</td>
<td>38,613</td>
<td>8,102</td>
<td>1,249,591</td>
</tr>
<tr>
<td>WCH</td>
<td>1,736,454</td>
<td>-</td>
<td>126,335</td>
<td>18,655</td>
<td>1,828,080</td>
<td>-</td>
<td>113,968</td>
<td>17,595</td>
<td>2,027,471</td>
</tr>
<tr>
<td>Totsal</td>
<td>25,003,597</td>
<td>-</td>
<td>126,335</td>
<td>18,655</td>
<td>24,756,914</td>
<td>-</td>
<td>113,968</td>
<td>17,595</td>
<td>27,935,772</td>
</tr>
</tbody>
</table>

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Drug supply costs – SAMI

- Drug supply costs have risen by $48K (6%) over the three years, with a CAGR of 3%
- The cost per weighted activity has increased from $1.21 to $1.27 – an increase of 5%.

<table>
<thead>
<tr>
<th>Site</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2014 % of total</th>
<th>3-year Growth</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAH</td>
<td>122,392</td>
<td>116,610</td>
<td>127,762</td>
<td>4%</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>TQEH</td>
<td>268,696</td>
<td>247,093</td>
<td>230,604</td>
<td>-14%</td>
<td>-7%</td>
<td></td>
</tr>
<tr>
<td>Country</td>
<td>15,074</td>
<td>12,464</td>
<td>12,167</td>
<td>-19%</td>
<td>-10%</td>
<td></td>
</tr>
<tr>
<td>LMH</td>
<td>137,666</td>
<td>158,068</td>
<td>161,725</td>
<td>17%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>FMC</td>
<td>82,470</td>
<td>75,338</td>
<td>168,262</td>
<td>104%</td>
<td>43%</td>
<td></td>
</tr>
<tr>
<td>RGH</td>
<td>91,639</td>
<td>71,539</td>
<td>76,743</td>
<td>-16%</td>
<td>-8%</td>
<td></td>
</tr>
<tr>
<td>WCH</td>
<td>65,653</td>
<td>68,537</td>
<td>54,798</td>
<td>-17%</td>
<td>-9%</td>
<td></td>
</tr>
<tr>
<td>SAMI Total</td>
<td>783,590</td>
<td>749,648</td>
<td>832,061</td>
<td>6%</td>
<td>3%</td>
<td></td>
</tr>
</tbody>
</table>
Prostheses and Implants costs – SAMI

- Prostheses costs have fallen by $520K (18%) over the period, with a CAGR of -9%
- The average cost per weighted activity has decreased from $4.56 to $3.75.

<table>
<thead>
<tr>
<th>Site</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2014 % of total</th>
<th>3-year Growth</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAH</td>
<td>2,458,551</td>
<td>2,477,209</td>
<td>1,904,533</td>
<td>79%</td>
<td>-23%</td>
<td>-12%</td>
</tr>
<tr>
<td>TQEH</td>
<td>370,791</td>
<td>342,286</td>
<td>362,799</td>
<td>15%</td>
<td>-2%</td>
<td>-1%</td>
</tr>
<tr>
<td>LMH</td>
<td>103,791</td>
<td>207,919</td>
<td>147,329</td>
<td>6%</td>
<td>42%</td>
<td>19%</td>
</tr>
<tr>
<td>FMC</td>
<td>13,163</td>
<td>3,888</td>
<td>6,604</td>
<td>0%</td>
<td>-50%</td>
<td>-29%</td>
</tr>
<tr>
<td>RGH</td>
<td>1,459</td>
<td>5,148</td>
<td>943</td>
<td>0%</td>
<td>-35%</td>
<td>-20%</td>
</tr>
<tr>
<td>WCH</td>
<td>442</td>
<td>476</td>
<td>2,656</td>
<td>0%</td>
<td>501%</td>
<td>145%</td>
</tr>
<tr>
<td>SAMI Total</td>
<td>2,948,197</td>
<td>3,036,927</td>
<td>2,424,863</td>
<td>100%</td>
<td>-18%</td>
<td>-9%</td>
</tr>
</tbody>
</table>
Financial performance – RoPP revenue

RoPP revenue– SAMI

- The tables below are based on billing data; this revenue is inconsistent with SAMI accounts.
- RoPP revenue decreased 1% ($224k) between 2012/13 and 2013/14, with significant variation between sites.
- LMH increased by 10%, while RAH and WCH revenue decreased by 11% and 12% respectively.

### 2014FY

<table>
<thead>
<tr>
<th>Site</th>
<th>Personal</th>
<th>Earned</th>
<th>Total receipts</th>
<th>% of total</th>
<th>Doctors</th>
<th>Admin/ Indemnity Fee</th>
<th>DH Fund</th>
<th>Equipment Fund</th>
<th>Hospital SPF</th>
<th>Total distributed</th>
<th>Growth on 2012/13</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMC</td>
<td>3,058.50</td>
<td>8,169,720.89</td>
<td>8,172,779.39</td>
<td>24%</td>
<td>2,126,731.53</td>
<td>737,593.28</td>
<td>1,857,959.10</td>
<td>3,450,495.48</td>
<td>8,172,779.39</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>LMH</td>
<td>2,093,606.46</td>
<td>4,339,612.64</td>
<td>6,433,219.10</td>
<td>19%</td>
<td>2,158,596.20</td>
<td>1,045,149.98</td>
<td>319,815.17</td>
<td>493,577.09</td>
<td>2,416,080.66</td>
<td>6,433,219.10</td>
<td>10%</td>
</tr>
<tr>
<td>RAH</td>
<td>7,385,301.20</td>
<td>7,385,301.20</td>
<td>7,385,301.20</td>
<td>22%</td>
<td>3,638,354.70</td>
<td>662,980.88</td>
<td>1,532,559.06</td>
<td>1,532,559.18</td>
<td>7,366,453.82</td>
<td>-11%</td>
<td></td>
</tr>
<tr>
<td>RGH</td>
<td>-1,060.25</td>
<td>3,449,830.94</td>
<td>3,448,770.69</td>
<td>10%</td>
<td>565,514.70</td>
<td>310,484.80</td>
<td>900,841.01</td>
<td>1,672,990.43</td>
<td>3,449,830.94</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>TQEH</td>
<td>31,563.35</td>
<td>6,690,544.45</td>
<td>6,722,107.80</td>
<td>20%</td>
<td>1,964,717.27</td>
<td>604,989.71</td>
<td>1,419,728.97</td>
<td>771,409.77</td>
<td>1,961,262.08</td>
<td>6,722,107.80</td>
<td>5%</td>
</tr>
<tr>
<td>WCH</td>
<td>173,408.22</td>
<td>1,949,858.05</td>
<td>2,123,266.27</td>
<td>6%</td>
<td>1,241,161.15</td>
<td>191,093.92</td>
<td>325,729.52</td>
<td>365,281.68</td>
<td>2,123,266.27</td>
<td>-12%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2,300,576.28</td>
<td>31,984,868.17</td>
<td>34,285,444.45</td>
<td>100%</td>
<td>11,695,075.55</td>
<td>3,552,292.57</td>
<td>4,498,344.25</td>
<td>3,123,275.44</td>
<td>11,398,669.51</td>
<td>34,267,657.32</td>
<td>-1%</td>
</tr>
</tbody>
</table>

### 2013FY

<table>
<thead>
<tr>
<th>Site</th>
<th>Personal</th>
<th>Earned</th>
<th>Total receipts</th>
<th>% of total</th>
<th>Doctors</th>
<th>Admin/ Indemnity Fee</th>
<th>DH Fund</th>
<th>Equipment Fund</th>
<th>Hospital SPF</th>
<th>Total distributed</th>
<th>Growth on 2012/13</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMC</td>
<td>4,058.55</td>
<td>8,144,934.96</td>
<td>8,148,993.51</td>
<td>24%</td>
<td>1,813,507.41</td>
<td>733,409.42</td>
<td>1,959,622.01</td>
<td>3,642,454.67</td>
<td>8,148,993.51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMH</td>
<td>1,523,932.43</td>
<td>4,334,190.67</td>
<td>5,858,123.10</td>
<td>17%</td>
<td>1,909,466.72</td>
<td>1,015,274.02</td>
<td>313,269.89</td>
<td>495,461.43</td>
<td>2,124,651.04</td>
<td>5,858,123.10</td>
<td></td>
</tr>
<tr>
<td>RAH</td>
<td>8,273,806.22</td>
<td>8,273,806.22</td>
<td>8,273,806.22</td>
<td>24%</td>
<td>2,704,256.28</td>
<td>744,642.55</td>
<td>2,412,453.89</td>
<td>2,412,453.50</td>
<td>8,273,806.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RGH</td>
<td>1,835.35</td>
<td>3,405,750.00</td>
<td>3,407,585.35</td>
<td>10%</td>
<td>477,850.85</td>
<td>304,684.70</td>
<td>910,997.51</td>
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**Benchmarking Activity**

**Time from outpatient referral to exam (in days)**

- Difficult to compare with other public hospitals, data not readily available
- RAH and LMH were at the higher end of the scale when taking into account all modalities

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Benchmarking Activity

Time from outpatient referral to exam (in days)

- Difficult to compare with other public hospitals, data not readily available
- RAH and LMH were at the higher end of the scale when taking into account all modalities

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Benchmarking Analysis

Time from emergency patient exam to report (hours)

- Difficult to compare with other public hospitals, data not readily available
- RAH performs well on comparison with other SAMI sites
- Peer hospitals appear to outperform SAMI sites (small sample data)

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Benchmarking Analysis

Time from outpatient exam to report (hours)

- Difficult to compare with other public hospitals, data not readily available
- Smaller regional hospitals perform well on comparison with other SAMI sites
- RAH performs well under par on this measure with both SAMI sites and peer hospitals

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Exams by hour of day and site, 2013-14 (year to date)

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The benchmark for cost per un-weighted test is calculated by dividing the total expenses by the number of total tests (un-weighted) e.g. $15,000,000 / 100,000 tests = $150 cost per test. It should be noted that the higher the dollar value the more expensive a test at that site.

The table compares the cost per test across a number of Australian public hospitals. It is noted that the use of a cost per test benchmark has its limitations as the data captured is high level and the raw activity numbers or financial classifications could contain variations in the way they have been captured.

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<td>Major regional acute facility</td>
</tr>
<tr>
<td>2</td>
<td>$197.66</td>
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</tr>
<tr>
<td>High Public Benchmark</td>
<td>$184.00</td>
<td>Public Benchmark ($165.00 - $184.00)</td>
</tr>
<tr>
<td>3</td>
<td>$180.40</td>
<td>Capital city acute facility</td>
</tr>
<tr>
<td>4</td>
<td>$173.05</td>
<td>Capital city acute facility (children’s)</td>
</tr>
<tr>
<td>5</td>
<td>$169.52</td>
<td>Capital city acute facility</td>
</tr>
<tr>
<td>6</td>
<td>$167.74</td>
<td>Major regional acute facility</td>
</tr>
<tr>
<td>Low Public Benchmark</td>
<td>$165.00</td>
<td>Public Benchmark ($165.00 - $184.00)</td>
</tr>
<tr>
<td>7</td>
<td>$155.75</td>
<td>Capital city acute facility</td>
</tr>
<tr>
<td>8</td>
<td>$153.76</td>
<td>Major regional acute facility</td>
</tr>
</tbody>
</table>

The benchmark for labour cost per un-weighted test is calculated by dividing the total labour expenses by the number of total tests (un-weighted) e.g. $10,000,000 / 100,000 tests = $100 labour cost per test. It should be noted that the higher the number the higher the labour cost per test.

The table compares labour cost per test across a number of Australian public hospitals. It is noted that the use of a labour cost per test benchmark has its limitations as the data captured is high level (e.g. Labour costs could be captured differently across sites) and the raw activity numbers could contain variations in the way they are captured.

<table>
<thead>
<tr>
<th>Facility Reference</th>
<th>Cost per test</th>
<th>Type of Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$168.07</td>
<td>Capital city acute facility</td>
</tr>
<tr>
<td>2</td>
<td>$141.07</td>
<td>Capital city acute facility</td>
</tr>
<tr>
<td>High Public Benchmark</td>
<td>$141.00</td>
<td>Public Benchmark ($127.00 - $141.00)</td>
</tr>
<tr>
<td>3</td>
<td>$140.28</td>
<td>Major regional acute facility</td>
</tr>
<tr>
<td>4</td>
<td>$137.37</td>
<td>Major regional acute facility</td>
</tr>
<tr>
<td>5</td>
<td>$136.02</td>
<td>Capital city acute facility (children’s)</td>
</tr>
<tr>
<td>6</td>
<td>$129.16</td>
<td>Major regional acute facility</td>
</tr>
<tr>
<td>7</td>
<td>$123.45</td>
<td>Capital city acute facility</td>
</tr>
<tr>
<td>Low Public Benchmark</td>
<td>$127.00</td>
<td>Public Benchmark ($127.00 - $141.00)</td>
</tr>
<tr>
<td>8</td>
<td>$123.40</td>
<td>Capital city acute facility</td>
</tr>
</tbody>
</table>
The productivity benchmark for imaging is calculated by dividing the number of total tests (un-weighted) by the total FTE e.g. 100,000 raw tests / 100 FTE = 1,000 tests per FTE. It should be noted that the higher the number the more tests each FTE conducts.

The table compares productivity across a number of Australian public hospitals.

<table>
<thead>
<tr>
<th>Facility Reference</th>
<th>Tests per FTE</th>
<th>Type of Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,109</td>
<td>Capital city acute facility</td>
</tr>
<tr>
<td>2</td>
<td>1,007</td>
<td>Major regional acute facility</td>
</tr>
<tr>
<td>High Public Benchmark</td>
<td>935</td>
<td>Public Benchmark (850 - 935)</td>
</tr>
<tr>
<td>3</td>
<td>911</td>
<td>Capital city acute facility</td>
</tr>
<tr>
<td>4</td>
<td>910</td>
<td>Capital city acute facility</td>
</tr>
<tr>
<td>5</td>
<td>893</td>
<td>Major regional acute facility</td>
</tr>
<tr>
<td>6</td>
<td>879</td>
<td>Capital city acute facility</td>
</tr>
<tr>
<td>Low Public Benchmark</td>
<td>850</td>
<td>Public Benchmark (850 - 935)</td>
</tr>
<tr>
<td>7</td>
<td>810</td>
<td>Capital city acute facility</td>
</tr>
<tr>
<td>8</td>
<td>802</td>
<td>Capital city acute facility (children's)</td>
</tr>
</tbody>
</table>
Appendix

ESMI targeted benefits

The ESMI business case identified a range of tangible benefits. Other targeted benefits, beyond those already described in operational improvements, are outlined below.

- Reduced time taken for clinician/patient to receive results of scan. Benefit primarily realised at sites currently lacking Voice Recognition (VR) capability (RGH and FMC currently have VR capability).
- Better quality patient management decisions, from improved access to images in multi-disciplinary team meetings
- Increased proportion of imaging studies reported by radiologist with subspecialist interest or skills (supporting subspecialist skill development, and yielding better quality/more timely reporting)
- Increase in staff safety from reduced use of film-based imaging
- ESMI will support compliance with College of Radiologists workload management guidelines. This will support reporting related to staff workload, productivity and quality
- Service improvements for referrers and patients. This provides greater flexibility in scan location, and faster turnaround for images.
- Service improvements related to improved operational reporting. Supports performance reporting, identifies operational efficiencies and supports broader operational improvements
- Improved ability to manage costs through improved support for an activity based funding model. Single state-wide system will provide consistent and transparent data for activity and financial analysis, removing the need for manual cross-site variations.
