WA Health ICT Review

Expert Review Panel

Advice to the Department of Finance, Government of Western Australia

Final Report submitted 16/12/11

Table of Contents

Executive Summary

WA Health is in a period of transformation. The Government of Western Australia has committed to a large-scale capital works program which includes new and upgraded facilities at Albany Health Campus, Fiona Stanley Hospital, the New Children's Hospital and Swan District Hospital.

The breadth and depth of reform underway represents a new level of system uncertainty and complexity. Specific to Health Information and Communications Technology (ICT), the scale of the challenge to modernise technical infrastructure requires strong leadership, technical capacity, working relationships, clinical engagement and robust governance. Without these, there are serious risks of project inertia and implementation delays.

An expert Review Panel was convened to review plans and readiness of WA Health for investment in ICT. The Review Panel reviewed the WA Health ICT Strategy, business cases, governance arrangements and internal operations.

The Review Panel recognises that over many years there have been major implementation issues associated with Western Australia's eHealth efforts, and as such the Department of Health has considerable work to do to restore confidence in its ability to deliver a large program of change. However, the Review Panel are convinced and see evidence that there have been significant improvements in capabilities over the last two years. Both Area Chief Executives and clinicians reinforced this. There are also early signs of success:

- Better use of the clinical information system for pathology ordering and results reporting;

- Widespread deployment of the Picture Archiving and Communication System (PACS)/ Radiology Information System (RIS);

- Successful data centre migration;

- First phase of the human resources/payroll implementation without disruption to operations; and

- Significant and sound progress in replacement of the Patient Administration System.

In relation to implementation of the new patient administration system called WebPAS, it has been 12 months between resolving contractual arrangements to the point of integration testing which is regarded as industry standard. Overpromising on timelines has dampened what is fundamentally good progress.

The Review Panel has proposed seven initiatives which will enable WA Health to respond to Government priorities, integrate ICT planning with infrastructure developments, and respond to the national eHealth agenda. The seven priority projects for WA Health are:

1. Laboratory Information System – State-wide implementation;

2. WebPAS – State-wide implementation over a more extended timeframe;

3. Portal, Enterprise Service Bus and Identity and Access Management – State-wide implementation of selected elements and a reduced scope;

4. Fiona Stanley Hospital ICT – Planning and implementation consistent with commissioning of Fiona Stanley Hospital and obligations under the agreement with Serco Australia;

5. Health Identifiers – State-wide implementation in line with national efforts;

6. Human Resources and Payroll – State-wide implementation; and

7. Infrastructure Facilities and Infrastructure Refresh – Coordinated implementation to meet defined standards and ratios for ICT infrastructure scaled to better align to program priorities.

There is an urgent need to commence these priority projects if the requirements of Fiona Stanley Hospital are to be met in time for its opening. All of the priority projects proposes have an interdependency with the specifications for Fiona Stanley Hospital under the Serco Australia contract. Specifically, it will be difficult for the Government to meet its obligations under the Serco Australia contract and achieve its vision for state-of-the-art health ICT Fiona Stanley Hospital if the following are not ready for implementation:

- Fiona Stanley Health ICT plan which integrates ICT with proposed clinical processes;

- Laboratory Information System;

- Clinical portal/clinical workbench application which integrates the various systems into a single clinician view;

- WebPAS; and

- Health Identifiers.

The Review Panel regard Fiona Stanley Hospital as the highest immediate priority, and have reduced the scope of other statewide projects to reflect this. Each priority project has tight timelines, and even with the reduction in scope and further phasing of implementation, they represent a challenging program of work if the imperatives of Fiona Stanley Hospital are to be achieved.

The Review Panel proposes the following prioritised sequence for submission to Government:

1. Revise the current draft WA Health ICT Strategy to reflect the changes in scope and phasing recommended by the Review Panel;

2. Develop the detailed Fiona Stanley Health ICT plan;

3. Prepare an implementation plan which specifies systems/applications, hospital and associated; and

4. Finalise the business cases to reflect the findings from this review.

The Review Panel proposes 29 recommendations which will provide structure and ensure that WA Health has the capacity to implement the ICT strategy. Many of these issues identified were not unique to WA Health, with the majority of health systems

embarking on large ICT reform experiencing similar issues. The central challenge is delivering manageable size projects within realistic timeframes. In developing recommendations, the Review Panel has endeavoured to enhance governance and build capacity so that WA Health is well placed to deliver on its vision for Health ICT and realise the benefits for the community of Western Australia.

Apart from the new governance structures, a critical success factor for delivery of the program will be the recruitment of skilled staff and in particular project leaders. It is acknowledged that there is a paucity of capable health IT project managers in Western Australia. As such, the Review Panel suggest that external assistance be quickly sought to recruit key personnel who will likely be sourced from interstate and overseas. It is proposed that recruitment progress be considered a high priority for monitoring under the new governance arrangements.

The Review Panel considers that many of the potential benefits of the proposed program will accrue to rural WA, where patients receive specialist services in Perth and are followed up in their own communities. A linked statewide ICT system is necessary to achieve this, as well as being more efficient to maintain. The past pattern has been to take a separate approach to metropolitan and rural WA, and as such, the Review Panel suggest that the focus of the new strategy be clearly statewide.

The Review Panel concludes that the broad level of investment proposed is consistent with eHealth strategies in other jurisdictions when scaled to WA. The Review Panel proposes some reductions in scope and changes in phasing to make the extensive program more implementable.

1   Summary of Recommendations

> **The Review Panel endorses the priorities for ICT investment to support the commissioning of the Fiona Stanley Hospital and meet the State's agreement with Serco Australia in relation to the provision of linked ICT services at Fiona Stanley Hospital.**

Strategy and Priorities

1. Define the critical path for the integrated Health ICT strategy. This should demonstrate the interconnectivity across activities, timelines and dependencies. Investment programs and business cases should follow the critical path.

2. Define the full suite of systems/applications that are planned for implementation at each hospital and health service. This is considered an imperative for the commissioning of new and upgraded facilities at Albany Health Campus, Fiona Stanley Hospital, the New Children's Hospital and Swan District Hospital.

3. Define which of the 150-200 clinical specialty systems (for example, for cardiology, renal and cancer services) will be retained and where they will be implemented. Align specific system/application requirements to individual hospital and health services. This may involve limitations in scope for some hospitals and health services and phased implementation. It is noted that the context of this decision to retain or replace a system/application should be based on meeting the 'go live' dates.

4. Advance medications management (ePrescribing, medication decision support, and preferably closed loop delivery) component of the Clinical Information System. This will need a carefully considered business case and implementation plan before submission for funding, which should be finalised over the next year. The WA Health ICT Strategy 2010-2020 highlights that the greatest benefit in terms of safety, quality and efficiency can be derived through medications management.

5. Prepare a revised 4-year budget based on the scope and phasing recommendations of the Review Panel.

Fiona Stanley Hospital Strategy and Governance

6. Develop a detailed, integrated ICT Plan for Fiona Stanley Hospital, incorporating interdependent activities and timelines in relation to Serco Australia and the Health Information Network to ensure that ICT developments are linked to the construction schedule. This should be done as a matter of urgency to ensure consistency with the Serco Australia critical path.

7. Define the clinical processes which incorporate new systems/applications planned for Fiona Stanley Hospital This should be led by the Health Information Network in

partnership with South Metropolitan Area Health Service to ensure that business requirements and ICT commissioning. It is noted that the Health Information Network is placed to deliver the specialist experience required to lead this work.

8. Define 'paperlite' workflows for clinical and non-clinical areas. The panel does not believe a 'paperless' Fiona Stanley is feasible at this stage of the WA eHealth strategy. For example, missing elements include clinical notes, prescriptions, and referral letters. Attempts to scan all paper are likely to lead to its own inefficiencies and should only be selectively implemented.

9. Establish a governance structure which has accountability and authority for Fiona Stanley Hospital ICT. This should be chaired by the South Metropolitan Area Health Service Area Chief Executive, and include senior Health Information Network participation. The Health Information Network should take responsibility for developing the detailed plan and leading the change management process (in conjunction with the Fiona Stanley Hospital executive and clinical team), and resources should be allocated to the Health Information Network accordingly.

10. Establish a dedicated Project Control Group for Fiona Stanley Hospital ICT. This will be at the working level.

11. Establish an ICT Program Management Office for Fiona Stanley Hospital ICT within the Health Information Network with clear prominence in organisational structure. This office should be accountable for the integrated project/portfolio plan, dependencies, risks, and change management and communication implications.

Business Cases

12. The Review Panel endorse the approach outlined in the Laboratory Information System business case. It is noted that WA Health will need to expedite replacement plans to meet the Fiona Stanley Hospital, Queen Elizabeth Medical Centre and the end-of-life for the current ULTRA product critical path.

Actions:

- o Instead of seeking two separate systems as specified in the Business Case, consider a single Laboratory Information System to simplify the implementation task. Existing systems are adequate without the need to pursue a more complex approach at this stage.

- o Prioritise for implementation in the short term. A whole of PathWest implementation is required as opposed to an incremental implementation.

- o It is noted that Commonwealth Medicare online billing should be reviewed as to sourcing it in the Laboratory Information System or the current generic billing system implementation. It is understood that billing outside the Laboratory Information System may be a challenge at this stage.

- o Following business case approval, proceed with tendering as a priority.

	It is noted that the requirements and request for tender documentation have been developed in preparation for this.
13.	The Review Panel recommend delayed implementation of a state-wide imaging Vendor Neutral Archive system. While the Review Panel believes there is clear value in the proposed system, such as ease of image transfer across WA and no dependencies on a single PACS/RIS supplier, the current PACS/RIS system across WA already puts WA Health at an advanced stage, and it is already possible to transfer digital images across Western Australia, although not as efficiently as through a Vendor Neutral Archive. It is noted that the Vendor Neutral Archive requires the state Health Identifier or WebPAS to be completed prior to implementation. The Review Panel's key consideration is a judgement about how many major Health ICT change projects can be managed at one time. The other projects supported are of higher priority. It could be considered in year three or four of the program, depending on progress on the other projects.
14.	The Review Panel accepts that a clinical information system/electronic medical record is an essential part of a modern Health ICT system. However, the Review Panel recommend that the focus of implementation be at Fiona Stanley Hospital in the first instance (Albany Health Campus could also be considered), and the scope should be minimised to avoid likely implementation delays. These systems are challenging to create and implement particularly on top of existing systems. The Review Panel propose Fiona Stanley Hospital as the trial site because it has a greenfields IT design which can be designed reflect new clinical processes. A strategy should be developed to reflect the narrowed scope and reduced implementation risk.
15.	The Review Panel endorse a reduced scope from that outlined in the Portal and Interoperability business case. This involves phasing of activities to deliver critical elements in the short term.
	Action:
	o Review the scope to prioritise the establishment of the Clinical Portal (only), Enterprise Service Bus and Identity and Access Management.
16.	The Review Panel endorses the approach outlined in the Patient Administration System business case. The timeframes should be revisited following the completion of the implementation at Fremantle Hospital and Health Service in March 2012. The Review Panel expect that implementation in rural WA will present particular challenges with data integration and replacement of multiple different systems, and the implementation timelines should reflect this. The timeframes for the commissioning of new hospitals, particularly Fiona Stanley Hospital are considered a critical milestone to Patient Administration System implementation.
	Actions:
	o Prioritise for implementation over an extended timeframe, specifically December 2015. The Review Panel acknowledge the dependency on the successful Enterprise Service Bus implementation to strategically

	decouple other applications from the PAS.
	o Integrate planning to align timeframes in relation to WebPAS implementation, commissioning of Fiona Stanley Hospital and obligations under the agreement with Serco Australia.

17. The Review Panel endorse the approach outlined in the Health Identifiers business case. This business case is considered a priority within the context of national eHealth reform. There is a need to develop a detailed implementation plan and consider data quality and search quality issues early in the project.

18. The Review Panel endorse the approach outlined in the Human Resources System Replacement business case. Phased implementation has indicated early successes, with approximately 6,000 WA Health employees transitioned to the Alesco Human Resource Information System (with very minimal faults).

19. The Review Panel was not able to assess the investment included in the Infrastructure Facilities business case. The Review Panel assume that all new facilities will require specific IT investment infrastructure and accepts that this is a priority. Without more specific information, the Review Panel could not assess whether the investment is at a reasonable level. It is expected that once the business cases are updated this will need to be reviewed and realigned to ensure the infrastructure is capable of supporting the roll out of applications.

Action:

o Further specification and justification of investment in Infrastructure Facilities.

20. The Review Panel accepts that an infrastructure refresh is required across WA Health. The level of investment requires a clearer foundation for investment, which should include: standards for replacement (for example desktops per ward and useful economic life standards) and alignment with investment in the other business cases.

Action:

o Finalise the Infrastructure Refresh business case. This should include rationales, standards and ratios, and alignment with the priority project investments.

Governance

21. Establish an enhanced governance structure which includes a WA eHealth Board (chaired by the Director General, Department of Health, with central agencies, a clinician representative, and independent experts). The Board would have responsibility for strategy and have the accountability/authority to amend the program scope and timelines. This board would be advised by a Clinical Consultative Council.

Structure and Capability

22. Build strengthened program and project management capability for ICT, including the ongoing development of a mature and dedicated ICT Program Management Office within the Health Information Network with clear prominence in organisational structure.
 	
Actions:
 	
    o Apply a portfolio management perspective to priority projects; and
 	
    o Adopt standardised project management methodology and milestone reporting. Individual project plans should be overlaid to support analysis of interdependencies across the projects.

23. Conduct a baseline measure of key operational performance indicators on select projects to enable articulation of demonstrable changes before and after new system/application implementation. This should be complemented by enhanced benefits realisation reporting capability and responsibility for reporting to project governance board. It is acknowledged that resources are unlikely to be available for all projects to participate in this.
24. Develop a defined change and adoption strategy which encompasses the breadth of projects and sites for implementation. The responsibility for change management resides under the Health Information Network which is best placed to provide coordinated site support and engagement working closely with hospitals.
25. Recruit a Health Informatics Team into the Health Information Network of 3-5 health informaticians. This capability will assist the Health Information Network with the design and implementation of new systems/applications and ensure they meet clinician needs.
26. Develop an information technology workforce strategy across WA Health. This should encompass health ICT recruitment and retention, and plans for the engagement of contractors.
27. Strengthen financial monitoring through a specialist finance IT position. The appointee would have an understanding of information technology projects in addition to core budgeting and finance skills. This will ensure strong financial reporting to the proposed WA eHealth Board.
28. Establish a dedicated ICT communications team which would be responsible for preparation of tailored messages and structured communications such as newsletters for all stakeholders.
29. Strengthen skills in IT procurement, vendor management and project financial management and reporting.

2 WA Health ICT Review

2.1 Approach

The Department of Finance, in conjunction with the Department of Health, initiated a review of WA Health's planned investment in Information and Communications Technology.

The scope of the review is available in Appendix A.

The review was undertaken by an expert panel comprising:

- Shane Solomon, Partner, KPMG (Panel Chair);

- Mike Rillstone, CEO of Health Support Services, Ministry of Health, Government of New South Wales;

- Dr Mukesh Haikerwal, National Clinical Lead, National E-Health Transition Authority; and

- Dr Sarah Muttitt, Senior Director, InfoComm Division, Ministry of Health, Government of Singapore.

Jade Hart, Manager, KPMG, assisted the panel in the review.

The Review Panel participated in a number of meetings scheduled by the Department of Finance. Sectors engaged in this review included:

- WA Health:
    - Department of Health
    - Health services
    - ICT Principal Subcommittee and Clinical Reference Group
    - Health Information Network;
- Department of Finance;
- Department of Treasury; and
- Department of Premier and Cabinet.

The review was conducted 30 November to 02 December 2011 at the Department of Finance. The Review Panel presented interim findings to key stakeholders 02 December 2011. Presentation slides were prepared.

This report outlines the final conclusions of the Review Panel.

2.2 Information Sources

The Review Panel were provided background information in either electronic or hard copy format. Information was provided as pre-reading and during the conduct of the review. A list of information sources is available in Appendix B.

3 Context of the Review

The Review Panel acknowledged that significant work has been undertaken in relation to ICT across WA Health. Key milestones include:

- 10-year $335 million Information Management Capital Investment in 2004;

- Establishment of the Health Information Network, including the creation of the role of Chief Information Officer;

- Definition of the WA Health ICT Strategy 2010-2020; and

- Establishment of ICT governance and engagement structures.

It is noted that WA Health has advanced the technical architecture in place and enhanced ICT project management capability. Most recently, this includes:

- The implementation of a new Human Resources and Payroll systems in selected hospitals with approximately 6,000 employees, with very minimal problems; and

- The successful migration of data centres to new locations without service disruption.

However, the Review Panel understand that there have been significantly delays in the procurement and implementation of ICT across WA Health. These delays have been signalled as 'false starts' to the WA Health ICT program, which has been considered as being at 'critical point' for the last ten years.

Central to reform is the replacement of the patient administration system, The Open Patient Administration System (TOPAS), which is considered out of date and unstable technology. In addition, the Western Australian Auditor General conducted an audit of ICT Procurement in Health and Training and noted that the patient administration system procurement has not been done well and that Health ICT funds ($335 million) largely remaining unspent. Despite significant delay, the Review Panel note that WA Health has made progress in the patient administration system replacement over the last year, with plans in place to implement the new patient administration system, WebPAS at Fremantle Hospital and Health Service by March 2012.

The Review Panel has reviewed the plans and readiness of the Health Information Network to manage ICT investment. The Health Information Network is responsible for the procurement, maintenance and support of ICT for WA Health through a team of approximately 450 public servants and contractors. The Health Information Network holds a state-wide purview of ICT. Within the context of a significant capital works program which includes Fiona Stanley Hospital, Albany Health Campus, New Children's Hospital and Swan District Hospital, there is a focus on delivering ICT solutions which can be implemented in a timeline which is consistent with infrastructure development timelines. To support this, the Health Information Network has endeavoured to advance its project and service operations to build greater technical and project management capabilities.

The Health Information Network is responsible for leading the development of business cases for ICT Investment. There are eight business cases which are currently in draft form which cover Clinical Workbench (Clinical Information System and Electronic Medical Record); Laboratory Information System Replacement Project; State-wide

Patient Administration Replacement Project; Human Resources System Replacement Project; Health Identifiers; Portal and Interoperability; Infrastructure Facilities; and Infrastructure Refresh Program. These priorities for ICT Investment are consistent with the broader WA Health ICT Strategy 2010-2020 which outlines the ICT programs, projects and releases (timeframes) for implementation. The strategy takes a whole of health view, and incorporates both metropolitan and rural health services. This strategy is currently in draft form and is not a publically accessible resource.

WA Health has endeavoured to take a state-wide view of planning, implementing and supporting ICT. However, of particular Government and system importance is the commissioning of Fiona Stanley Hospital in 2014. The aim is for Fiona Stanley Hospital to offer world-class health services, employing contemporary ICT and 'paperlite' practices. Serco Australia have been contracted to run facilities management and support services at Fiona Stanley Hospital. As such, there is an obligation to satisfy requirements under the State's agreement with Serco Australia in relation to the provision of linked ICT systems at Fiona Stanley Hospital.

The significant activity that is currently underway across WA Health and in particular the new organisational and contractual arrangements that are in place have framed the context of this review.

4 Key Themes

Consistent with the scope of the review, the Review Panel have presented observations and recommendations in line with the following key themes:

- WA Health ICT Investment Priorities – ICT strategy and approach;

- Fiona Stanley Hospital – ICT requirements to support facility commissioning consistent with the requirements under the agreement with Serco Australia; and

- Business Cases for ICT Investment – Assessment of eight draft business cases;

- Priority Projects – Informed by business case assessment, the priority projects for implementation; and

- WA Health Capability Building – Current issues and recommendations in relation to:
    - Governance;
    - Project Management;
    - Benefits Realisation Planning;
    - Change and Adoption;
    - Health Informatics;
    - Workforce;
    - Information Technology Finance;
    - Communications; and
    - Procurement.

Recommendations have been summarised into an action plan for implementation over the short term.

5   WA Health ICT Investment Priorities

WA Health proposes a significant but credible program of ICT investment. Driven by the need to provide a coherent approach to ICT planning and implementation, WA Health has defined an ICT strategy, vision and twelve programs of work. Ten of these twelve programs of work have informed the development of eight draft business cases.

5.1   Review of ICT Investment Priorities

5.1.1   Levels of ICT planning

The Review Panel endorses the priorities for ICT investment to support the commissioning of the Fiona Stanley Hospital and meet the State's agreement with Serco Australia in relation to the provision of linked ICT services at Fiona Stanley Hospital. However, the Review Panel have identified that there are two diverse and competing objectives that are impact on ICT planning and delivery across WA Health. The Health Information Network holds a state-wide purview with an aim of planning and implementing systems/applications across WA Health. This approach aims to promote equity of service and ICT capacity across metropolitan and rural Western Australia. However, there is a lack of focus on site-specific implementation and unrealistic timeframes for completion if all projects are going to be completed in full.

As a consequence, the business cases for each of the ICT projects emphasise state-wide implementation of the same systems. This will help overcome historical decisions which account for the large level of system/application disparity across WA Country Health Services. However, this state-wide approach needs to be complemented with specific plans for all hospitals and health services, and in particular give priority to Fiona Stanley Hospital and the other hospitals under construction. As such, there is a need to align specific system/application requirements to individual hospitals. This may involve limiting scope for some hospitals and phased state-wide implementation. While this approach assists in standardisation, it will still require significant local integration and change management activity.

Principally there is a need to define the suite of systems/applications that are going to be implemented at each hospital and health service. This is considered an imperative for the commissioning of new and upgraded facilities at Albany Health Campus, Fiona Stanley Hospital, the New Children's Hospital and Swan District Hospital. Without commensurate prioritisation of facility level ICT planning, a state-wide strategy will fail to meet the immediate planning needs of new facilities.

5.1.2   Fiona Stanley Hospital

Fiona Stanley Hospital is noted as a Government priority and facility level ICT planning should be undertaken as a priority accordingly. At present, there is no documented and detailed plan that outlines suite of systems/applications that will be implemented at Fiona Stanley Hospital.

The uniqueness of the Fiona Stanley Hospital build should not be underestimated in ICT planning. There are particular challenges in designing clinical processes which

incorporate new systems/applications or adopt 'paperlite' practices when there is no existing workforce or process with which to compare. These issues require open and collaborative design processes which need to be led by the Health Information Network following confirmation of the systems/applications that will be implemented. It is noted that the Health Information Network is placed to deliver the specialist experience required to lead this work.

There lacks a robust facility Fiona Stanley Hospital ICT planning and governance which includes the following:

- Governance structures which can take accountability and authority for Fiona Stanley Hospital ICT. A Steering Committee should be established chaired by the South Metropolitan Area Health Service Area Chief Executive, with senior Health Information Network membership, and supported by both the Fiona Stanley Hospital executive and clinicians.

- A dedicated team within the Health Information Network that is charged solely with ICT at Fiona Stanley Hospital.

- A dedicated Project Control Group for ICT at Fiona Stanley Hospital to resolve the many working level issues, such as clinical processes and how the new systems/applications will support these.

5.1.3   Serco Australia

WA Health has clear requirements under the State's agreement with Serco Australia, the Fiona Stanley Hospital Facilities Manager, relating to the provision of linked ICT systems at Fiona Stanley Hospital. Specifically, Serco Australia's role includes scanned records, site wide scheduling, patient entertainment, equipment tracking, audio/visual services, and helpdesk services.

It is noted that WA Health's contract includes rigorous and documented performance standards. However, it is understood that linked to this is WA Health's provision of the specific systems/applications. As such, it is strongly recommended that a detailed, integrated ICT Plan for Fiona Stanley Hospital be developed, incorporating interdependent activities and timelines in relation to Serco Australia and the Health Information Network to ensure that ICT developments are linked to the construction critical path.

WA Health's agreement also includes management, procurement and integration services. It is understood that Serco Australia is obliged to procure subcontracts in an open and transparent manner; however, it is evident that the agreement also holds particular procurement implications which may differ from existing Government procurement arrangements.

5.2 Gaps in current priorities

5.2.1 Definition of the critical path

State-wide strategies need to demonstrate interconnectivity across activities, timelines and dependencies. In line with this, investment programs and business cases should follow the critical path which incorporates milestone targets.

The current strategy includes three horizons and quarterly release schedules. However, it considered that the program of work to 2014 is highly ambitious with an overloaded scope in the first three years.

The critical path needs to be realistic and focus on rebuilding WA Health's credibility in Health ICT. This can only be achieved through delivering on targets and projects as agreed with finance divisions within the Department of Health, the Department of Finance, the Department of Treasury and the Department of Premier and Cabinet. It is also noted that the Western Australia Auditor General holds a particular interest in the State-wide Patient Administration System Replacement project.

5.2.2 Suite of systems/applications

The twelve programs of work are considered comprehensive in scope. However, as a priority there needs to be clear definition of which of the 150 to 200 clinical specialty systems (for example, for cardiology, renal and cancer systems) will be retained and where they will be implemented. As part of this, there should be a clear system evaluation and feedback process to ensure transparency. In addition, there is the opportunity to leverage successful adoption and value of eDischarge summary systems. This is critical to maintaining clinical engagement and achieving more standardisation across Western Australia.

Medications management is included as a component of the Clinical Information System due for implementation in stage 1 (2013). The WA Health ICT Strategy 2010-2020 highlights that the greatest benefit in terms of safety and quality can be derived through medications management. The Review Panel understands that the implementation of medications management is particularly complex; however, there is a need to advance design work on medications management (ePrescribing).

It is recommended that speciality systems and medications management (ePrescribing) should be brought forward in ICT planning. This may require dedicated investment and consider opportunities to leverage the national agenda for medications management. In terms of implementation, it is noted that the context of this decision to retain or replace a system/application should be based on meeting the 'go live' dates. Additional activities should be avoided that aim to achieve system/application 'perfection' but inevitably result in implementation delays.

6 Business cases for ICT Investment

The Review Panel reviewed and assessed the eight draft business cases for ICT investment. It was noted that the business cases applied a consistent format which emphasised business need rather than detailed implementation planning, which should be the next step.

6.1 Criteria for Assessment

Informed by the objectives of the review, the Review Panel defined the following criteria for business case assessment:

1. **The system/application replacement is critical to continuing operations** – There are critical risks to operations and associated clinical/non-clinical processes if existing systems/applications currently used across WA Health are not replaced.

2. **The system/application is necessary to deliver Fiona Stanley Hospital** – The system/application is required in order to commence operations at Fiona Stanley Hospital in 2015. This includes satisfying the State's agreement to Serco Australia in relation to the provision of linked ICT systems at Fiona Stanley Hospital.

3. **The existing system/application could be safely extended to new facilities** – There is an existing system in place that could be extended to other/new facilities without the need to build or purchase a new system.

4. **The existing system/application will be replaced in short-term** – There are realistic plans in place to replace the existing system/application, and so should be implemented in the new facilities to avoid a double implementation in a short period.

5. **There are implementation risks** – Implementation risks are manageable, with risk mitigation strategies defined.

6. **There are options to phase implementation of all components system/application** – System/application phasing is an option that should be considered.

7. **The business case applies realistic timeframes for implementation** – Consistent with the scale and scope of implementation, realistic timeframes have been proposed.

8. **The system/application improves rural access and connectivity** – The system/application will contribute to improvements for rural Western Australia.

9. **The system/application has links to national agenda** – The system/application is a component of the national eHealth agenda, including progress toward the Personally Controlled Electronic Health Record.

10. **The system/application represents value for money** – The business case maximises the value for money to WA Health and the Government of Western Australia.

6.2   Summary of business case assessment

Criteria	Laboratory	Imaging	Clinical Workbench	Portal & Interoperability[1]	PAS	Health Identifiers	HR & Payroll	Infrastructure Facilities[2]	Infrastructure Refresh[3]
1. Assure continuing operations	Yes	No	Yes	Yes	Yes	No	Yes	TBD	Yes
2. Assure Fiona Stanley Hospital delivery	Yes	No	Yes	Yes (elements)	Yes	Yes	Yes	TBD	NA
3. Options for extension of existing system	No	Yes	No	Yes (elements)	Yes	NA	Yes	TBD	NA
4. Short term replacement planned	Yes	No	Yes	No	Yes	Yes	Yes	TBD	NA
5. Implementation risk	Low	Low	High	Medium	TBD[4]	Low	Low	TBD	Low
6. Phased implementation option	No	Yes	Yes	Yes	Yes	Yes	Yes	TBD	Yes
7. Realistic implementation timeframes	Yes	No	No	Yes	Yes	Yes	Yes	TBD	Yes
8. Improve rural access	No	Yes	No	Yes	Yes	Yes	Yes	TBD	Yes
9. National eHealth agenda links	No	No	No	Yes (elements)	Yes	Yes	No	TBD	NA
10. Represents value for money	Yes	Yes	Yes	Yes (FSH) No	Yes	Yes	Yes	TBD	Yes

---

[1] Individual elements of the Portal and Interoperability Business Case have been considered in isolation as part of this assessment.
[2] The Review Panel was unable to identify the specifications in the Infrastructure Facilities Business Case. This is due in part to lack of clarity in the presentation of infrastructure which already has a funding committed from alternative sources.
[3] The Infrastructure Refresh Business Case will not directly contribute to all assessment criteria. As such, some criteria have been marked 'not applicable' as appropriate.
[4] Patient Administration System implementation risks will be informed by current testing which is due for completion by March 2012.

6.3   Detailed business case assessment

6.3.1   Laboratory Information System Replacement Project

The Review Panel endorse the approach outlined in the Laboratory Information System business case; however as a single system. It is noted that WA Health will need to expedite replacement plans given the state of existing systems.

The ULTRA laboratory information system is considered at its limit and will reach the end of its life in July 2013. Notably, ULTRA cannot support further automation of laboratory work, effective diagnostic practices or National E-Health Transition Authority e-Pathology.

The scope of the Laboratory Information System procurement proposes two separate systems for different aspects of the pathology services (clinical pathology and anatomical pathology). While this may be better 'fit for purpose' these additional applications create system dependencies and greater complexities in an already challenging program of change. The alternative option is a single Laboratory Information System which is readily is available in the market.

The costings of the new Laboratory Information System will assist PathWest to reduce its operational spend and gain productivity improvements.

Given the timeline for the decommissioning in 2013, the critical path requires contract commencement as a priority by February 2012. This is consistent with requirements at Fiona Stanley Hospital and Queen Elizabeth Medical Centre. Compliance issues need to be resolved in the short term in relation to Commonwealth Medicare online billing requirements. This is a tight timeframe, and needs to commence immediately to put the Fiona Stanley Hospital imperatives. It is understood that Health Identifiers project would facilitate transition and streamline some of the elements of billing.

The Laboratory Information System represents a medium risk; however, there may be additional risks in relation to technology integration, dependencies and data migration.

A whole of PathWest implementation is required as opposed to an incremental implementation. Given this, the new Laboratory Information System will represent a significant change to business processes for users. As such there is a need to harmonise practices and configurations.

6.3.2   State-wide Imaging

The Review Panel recommend delayed implementation of a state-wide imaging. This should occur in year three of the program. As such, the State-wide Imaging business case should be reviewed with regards to timelines.

The State-wide Imaging business case aims to deliver a vision where clinicians in WA Health are able to access and management imagines, regardless of location, type of image or modality used to capture the image. The project is interdependent on the clinical portal, Health Identifiers and Enterprise Master Patient Index.

The State-wide Imaging business case aims to extend the current PACS/RIS which has been implemented across medical imaging departments in all metropolitan teaching hospitals, Rockingham General Hospital, the Chest Centre, Osborne Park Hospital and Swan District Hospital.

The recent implementation of PACS/RIS represents a major achievement for WA Health. However, it is acknowledged that there are a number of disciplines (beyond medical imaging) that cannot be captured and managed through this service. As such, the State-wide Imaging business case allows for the creation of a Vendor Neutral Archive which is able to manage up to 50 image types. This will open the market to other vendors.

The Review Panel acknowledged that, to date, the PACS/RIS implementation has resulted in a number of benefits providers and patients and the Vendor Neutral Archive will offer additional benefits. However, with due consideration of the number of projects that can be delivered within a defined timeframe; it is proposed that the State-wide Imaging business case be delayed until year three of the program.

Key considerations for state-wide imaging include:

- Sharing of medical imaging can be achieved at Fiona Stanley Hospital through scanning and forwarding files as attachments between hospitals. This approach could also be extended to rural hospitals. This is less efficient than the Vendor Neutral Archive, but should be adequate in the short-term.

- The existing PACS/RIS system is already operating and could be easily implemented at sites. As such, sharing can still be realised amongst the network of hospitals that currently use PACS/RIS.

- WA Health's readiness for state-wide imaging could be expedited through building a data repository for the PACS/RIS system. This would be faster than setting up a central Vendor Neutral Archive.

- The Vendor Neutral Archive requires the state Health Identifier or WebPAS to be completed prior to implementation.

6.3.3　Clinical Workbench (Clinical Information System and Electronic Medical Record)

The Review Panel supports establishing a clinical information system/electronic medical record. However, the Review Panel recommend that the focus of implementation be at Fiona Stanley Hospital. This should involve a narrowed scope to reduce implementation risk.

The Clinical Workbench (clinical information system and electronic medical record) business case describes the clinical workbench as encompassing the following components: clinical information system, clinical priority, medical record/electronic medical record, clinical notes, care planning, medication, handover, orders, referrals and results, clinical incidents, underpinning support functions, diagnostic reporting, speciality departments, and shared clinical summary.

Key considerations for the Clinical Workbench (clinical information system and electronic medical record) include:

- Access to an integrated patient information system is a priority for the Fiona Stanley Hospital 'paperlite' vision.

- The Clinical Workbench (clinical information system and electronic medical record) detailed design needs to consider the interface with the new WebPAS (and TOPAS functionality replacement) and the proposed use of scanned medical records at Fiona Stanley Hospital.

- The Clinical Workbench (clinical information system and electronic medical record) is interdependent with the replacement of the Patient Administration System.

The Review Panel recommends the following:

- Limit the scope to core clinical elements. For example, prevention and care planning modules are not considered priorities in the short term. The scope should be limited to replacing the functionality of TOPAS and extracting clinical information from the speciality clinical systems (for example cardiology, renal, cancer systems) and integrating scanned records (if this is demonstrated to be valuable).

- Develop the clinical pathways/care planning/medications management in future phases of implementation. These should be separated and pursued as independent projects.

- Identify and implement the suite of specialty systems for Fiona Stanley Hospital. Aim to standardise speciality systems at the state-wide level at a future date.

At present, value for money cannot be determined given the need to separate and simplify the components, but it is considered to be less risky than state-wide implementation during Stage 1.

The Review Panel noted that the language and terminology was not clear across the business which impacted on the depth of review possible. In reviewing this business case there is a need to improve the accessibility of language used.

6.3.4 Portal and Interoperability

The Review Panel endorses a reduced scope from that outlined in the Portal and Interoperability business case. This involves phasing of activities to deliver critical elements in the short term.

The Portal and Interoperability business case aims to deliver a consolidated public facing website as well as a platform for different users to access personalised health care information. The business case will provide the ability to contact the suite of clinical, corporate and external systems used by WA Health through reusable business services, business rules and integration points.

This business case is considered essential in meeting requirements for National E-Health Transition Authority, obligations under the State's agreement with Serco Australia and implementation of other systems/applications (specifically patient administration system and clinical information systems). The Enterprise Service Bus

and Identity and Access Management are critical to the delivery of Fiona Stanley Hospital. The electronic medical record is also dependent on portal services which provide the user interface workbench for users to access and submit information.

The Review Panel suggest that this project be divided into smaller components for implementation. In terms of priority, the interoperability component is considered urgent for new facilities and the overall WA Health ICT strategy. It is recommended that this be the areas of focus. The Clinical Portal may be considered the critical entry point for clinicians in the new hospitals. The Review Panel acknowledges that patient access and clinician collaboration represent significant change in culture and behaviours. As such, it is anticipated that there will be limited uptake in the short term. The Review Panel does not consider the consolidation of websites a priority for investment in the short-term. The business case is of medium risk, largely attributed to the contract with Serco Australia. The Review Panel believes that the limited scope is value for money, but is not convinced about the wider scope at this stage. As such, it is recommended that the project be rescoped to represent total costs of ownership and value for money. The Review Panel consider that the project would certainly represent value for money if completed appropriately.

6.3.5   State-wide Patient Administration Replacement Project

The Review Panel endorses the approach outlined in the Patient Administration System business case. The business case will need to be revised to reflect the outcomes and timeframes following the completion of the implementation at Fremantle Hospital and Health Service in March 2012. The timeframes for the commissioning of new hospitals, particularly Fiona Stanley Hospital are considered a critical milestone to Patient Administration System implementation.

The State-wide Patient Administration System Replacement Project is a priority for WA Health. The scope of the system/application includes the core components in addition to emergency department, theatre management, bed boarding and scheduling (Fiona Stanley Hospital only). The business case includes implementation in 82 hospitals by December 2014.

The Review Panel believes that the timelines are ambitious. The business case was authored prior to the delays in implementation at Fremantle Hospital and Health Service and is framed around successful testing and implementation by November 2011. As such, there is a need to ensure that business case timeframes and risk plans are updated to reflect current circumstances. Implementation across rural Western Australia is likely to be complex because of the various systems that will need to be replaced. This suggests further revision of timelines will be necessary following initial implementation in rural hospitals. Experience in other jurisdictions suggest that once the Patient Administration System has been built and tested centrally, it will take approximately 6 months to complete an area health service comprising 2-3 tertiary hospitals and a cluster of 4-6 secondary hospitals.

The Patient Administration System is considered a key dependency for other systems/applications. Given this, it would be preferable to implement the Patient Administration System first to avoid other systems/applications having to be integrated with a redundant Patient Administration System. In addition, older systems/applications

being replaced in the short term may still need to be integrated with the new Patient Administration System. These factors are important to consider early in the planning process. The Patient Administration System is recognised as critical to the delivery of new hospitals, in particular Fiona Stanley Hospital. There are independences in timeframes between the requirements of Serco Australia in the provision of linked ICT services. Given this, there is an imperative to align timelines between the Patient Administration System implementation, Serco Australia activities and implementation, and capital developments. There are key risks where scheduling and implementation occurs independently. The Health Information Network has established a sizeable team and engaged a systems integration partner, CSC to assist with implementation. The Review Panel recognises that CSC has a sufficient workforce with the required capabilities. However, the Review Panel proposes that a more realistic timeline is likely to be December 2015, but this will require more detailed scheduling. The Review Panel acknowledge the dependency on the successful Enterprise Service Bus implementation to strategically decouple other applications from the PAS.

The business case suggests parallel deployments but lacks details on the phased implementation across WA Health.

6.3.6   Health Identifiers

The Review Panel endorses the approach outlined in the Health Identifiers business case. This business case is considered a priority within the context of national eHealth reform.

The Review Panel understand the importance of Health Identifiers to deliver a master identity management solution which allows patient information to be accessed in all WA hospitals, which is particularly valuable for rural patients who have been treated in Perth hospitals. WA Health has issued a tender to procure and identified a preferred supplier; however at the time of authoring the business case, there was no project funding to proceed.

The Health Identifiers project is a component of the Electronic Medical Record and importantly is required to meet national obligation to comply with the Healthcare Identifiers Act 2010.

The Review Panel note that at present there are several independent identifiers used across WA Health. These are held within the patient administration systems used within metropolitan and rural Western Australia (TOPAS and HCARe respectively). As such, there are clear linkages between the Health Identifiers project and the State-wide Patient Administration System Replacement Project. In this instance, WebPAS will need to be linked to TOPAS. Integration will be considered critical and these system links may need to be maintained for up to five years (during which time TOPAS will need to be maintained). There is a need to develop a detailed implementation plan and consider data quality and search quality issues early in the project.

6.3.7　Human Resources System Replacement Project

The Review Panel endorses the approach outlined in the Human Resources System Replacement business case. Phased implementation has indicated early successes, with approximately 6,000 WA Health employees transitioned to the Alesco Human Resource Information System (with very minimal faults).

The Review Panel understands the complexities with the transition to a new Human Resources System given diverse staff awards, integration and customisation requirements. As such, the Review Panel commend the recent and successful implementation of the Alesco Human Resource Information System in selected areas across WA Health. It is noted that exiting systems/applications are not at end-of-life.

Informed by previous success, the business case represents a low risk approach which delivers value for money. The Review Panel endorse the phasing approach currently being applied to implementation.

6.3.8　Infrastructure Facilities

The Review Panel were not able to identify the specifications included in the business case. The Review Panel accepts in principle that IT infrastructure will be essential in the new facilities.

The Review Panel identified the following issues impacting the Infrastructure Facilities business case:

- Lack of identification of elements of the business cases which will already be funded through alternative sources. For example, from the Fiona Stanley Hospital capital development.

- Lack of clarity in relation to the status of projects contained within the business cases. In particular, lack of reference to the status of funded projects.

- Inability to link infrastructure investment to programs or processes that require it making prioritisation decisions difficult.

It is expected that once the business cases are updated this will need to be reviewed and realigned to ensure the infrastructure is capable of supporting the roll out of applications.

6.3.9   Infrastructure Refresh Program

The Review Panel strongly supports an infrastructure refresh program across WA Health to align with the other proposed projects. However, the Review Panel is unable to interpret infrastructure refresh requirements and proposals in the absence of clear standards, such as useful economic life, workstations per clinician, and the requirements arising from the other planned projects.

The Review Panel identified the following issues with the Infrastructure Panel business case:

- Need for a current state assessment of the WA Health information technology infrastructure, and a gap analysis in line with replacement standards. This has not yet been developed.

- Need for alignment between infrastructure refresh timelines and the broader WA Health ICT strategy.

- Need to specify the infrastructure refresh implications of the projects proposed in the other business case proposals.

- The need to develop objective standards for infrastructure refresh, such as:

    o Number of desktops per clinician;

    o Redundancy standards for different equipment (such as workstations, printers, routers); and

    o Core options supported for infrastructure with respect to portability and access.

7 Priority Projects

The Review Panel propose the following as priority projects for WA Health ICT:

Priority Project	Key Activities
1. Laboratory Information System	• Consider a single Laboratory Information System rather than the two system model proposed. • Prioritise for implementation in the short term.
2. WebPAS	• Prioritise for implementation over an extended timeframe, specifically December 2015. • Integrate planning in relation to WebPAS implementation, commissioning of Fiona Stanley Hospital and obligations under the agreement with Serco Australia. • Revise the timelines to be more realistic, with explicit staging by hospital.
3. Portal, Enterprise Service Bus and Identity and Access Management	• Review the scope to prioritise the establishment of the portal, Enterprise Service Bus and Identity and Access Management.
4. Fiona Stanley Hospital ICT	• Develop a detailed, integrated ICT Plan for Fiona Stanley Hospital, incorporating interdependent activities and timelines in relation to Serco Australia and the Health Information Network to ensure that ICT developments are linked to construction critical path. • Define the clinical processes which incorporate new systems/applications. • Define 'paperlite' workflows for clinical and non-clinical areas.
5. Health Identifiers	• Develop a detailed implementation plan for Health Identifiers.
6. Human Resources and Payroll	• Proceed with full implementation of the Human Resources and Payroll.

Priority Project	Key Activities
7. Infrastructure	• Define proposed expenditure on new infrastructure and align with infrastructure program.
8. Infrastructure Facilities and Infrastructure Refresh	• Define the Infrastructure Facilities and Infrastructure Refresh program based on alignment with other business cases and develop standards and ratios. Compare this with the current state.

7.1 Strategy for Investment

The recommendations for the seven priority projects (the two infrastructure projects should be combined into one project) will impact on the existing strategy for investment. In particular, the business case costings will need to be reviewed where changes to the scope and phasing have been proposed.

In terms of the annual investment, experience in other jurisdictions suggests that the maximum activity that can be undertaken in a given year can be correlated with the costs of delivering these activities, with health systems unable to sensibly expend more than $100 million per year.

The Review Panel suggests an initial four-year investment in WA Health ICT which is based on ten-year strategy. Inherent in this is approach is:

• That there is no ongoing funding commitment after year four; and

• The next stage of investment dependent on revised investment strategy for overall program and clear evidence of performance.

In addition, a phased annual investment approach is recommended which is conditional on meeting defined targets. This may include an initial six-monthly external review, two-year Gateway review and four-year revised program review.

This budget horizon will require an explicit agreement between the Department of Health and the Department of Treasury, particularly concerning what is regarded as acceptable and realistic progress.

8 WA Health Capability Building

The Review Panel identified a number of areas where WA Health's capability and preparedness to procure, implement and risk management Health ICT was an issue.

8.1 Governance

The Review Panel has examined the current governance arrangements with due consideration of the features of good governance:

- Maintains detailed oversight of all disciplines and mitigates any risks of delays against planned timeframes;

- Constructive and informed challenge is allowed and fostered in committees and groups; and

- Clear authority, escalation processes and, change control systems are in place.

WA Health ICT projects are currently governed through a defined structure for all strategic WA Health ICT plans, projects, services and operations. This comprises governance committees, a Senior Responsible Officer, Chief Information Officer and Executive Sponsor. A terms reference exists for the range of committees and groups that govern WA Health ICT. The emphasis is on a demarcation approach. Experience indicates that these demarcation approaches are rarely consistently understood across all stakeholders, are fairly inflexible, and are unable to cope with integration and uncertainty as regularly seen in ICT programs.

Broadly, the Review Panel observed:

- Governance bodies operate as disconnected parties;

- Focus on providing advice. Lack of authority for decision-making;

- Reporting is high level with variable links between detailed readiness assessment, project management and whole of strategy monitoring;

- Perceptions of lack of informed challenge across groups;

- Lack of timely liaison with finance areas within the Department of Health, Department of Finance, Department of Treasury and Department of Premier and Cabinet; and

- Lack of documented escalation policies across governance structure.

The Review Panel identified the following issues related selected governance bodies:

Governance body	Observations
eHealth WA Project Council	• No formal authority to approve or amend program. • Diverse representation from clinicians and WA operational executives. • Includes Department of Treasury, Department of Finance, Department of Premier and Cabinet, but they are advisory participants, rather than having decision-making authority. • Chair is the Director General.
Senior Responsible Officer	• Role undertaken by the Director General. • Responsibilities undertaken within the context of significant and busy portfolio. However, ensures executive support for strategy.
WA State Health Executive Forum ICT Principal Committee	• Executive level membership. • Majority of membership and chair do not have direct or operational responsibility for ICT, nor authority to approve or amend program. • Committee provides recommendations to the State Health Executive Forum and as such does not hold authority and independent decision making ability.
Clinical Reference Group	• Clinician representatives from various regions and areas of expertise. • Serves as an advisory group. • No authority and limited contribution to decision making in relation to clinical ICT.
Business Readiness and Training Sub-Committee	• This committee has not been active. • Considered of critical importance.

The Review Panel have proposed a governance structure which includes board level accountability and authority. This board would be advised by a consultative council.

Key elements of this approach are listed below:

1. eHealth WA Program Board

    o Chaired by Director General, Department of Health.

  o Membership to comprise: Department of Treasury, Department of Finance, Department of Premier and Cabinet, Health Service Chief Executives, Chief Information Officer, Chair of Clinical Reference Group, and Independent Information Technology Experts (external).

  o Replaces WA State Health Executive Forum ICT Principal Committee and eHealth WA Project Council.

  o Provides strategic oversight, including program monitoring, and change control.

  o Approves risk mitigation strategies.

2. eHealth WA Consultative Council

  o Chaired by Director General, Department of Health.

  o Advisory to WA eHealth Program Board.

  o Membership to comprise: Stakeholders including clinicians and WA Health management.

An important component of the enhanced governance framework is the conduct of annual and independent quality assurance reviews for each ICT project.

Specific to Fiona Stanley Hospital there is a need for formalised governance arrangements. The proposed elements of the Fiona Stanley Hospital ICT Steering Committee are listed below:

- Chair: Area Chief Executive, South Metropolitan Area Health Service.

- Membership to comprise: Health Information Network, Department of Finance, Department of Premier and Cabinet, South Metropolitan Area Health Service and Serco Australia (by invitation).

- Develops, approves, costs, plans, monitors and amends.

8.2 Project Management

The Review Panel observed that there was variable ICT project management capability. This was evidenced by numerous examples of ICT delays, notably the patient administration system testing and implementation at Fremantle Hospital and Health Service which highlighted issues in forecasting, monitoring and reporting. It is acknowledged that reporting of project timelines is a key component of a strong governance framework.

The Review Panel recommends development a strengthened project management capability for ICT, including the enhancement of the dedicated ICT Program Management Office. The Program Management Office will serve and be recognised across WA Health as the clear lead for the planning and implementation of the key ICT projects. The Health Information Network would undertake this Program Management Office role with clear prominence in organisational structure. This office should be accountable for the integrated project/portfolio plan, dependencies, risks, and change management and communication implications.

At present, there is no dedicated Project Management Office for the Fiona Stanley Hospital in the Health Information Network organisational structure chart which does not support effective project management for such a high priority project. This is considered a priority.

Other key recommendations for project management include:

- Apply a portfolio management perspective to priority projects; and

- Adopt standardised project management methodology and milestone reporting. Individual project plans should be overlayed to support analysis of interdependencies across the projects.

8.3   Benefits realisation planning

The WA Health ICT Strategy 2010-2020 aims to deliver demonstrable improvements in the health and well-being of the community. A key component of benefits realisation planning is the conduct of a baseline measurement prior to the commencement of a project. The benefits realisation process would enable WA Health to demonstrate the clinical and service value of ICT. It is anticipated that the results would create greater transparency, the outcomes of which may help to build confidence in WA Health's capability.

The Review Panel recommends the conduct of a baseline measure of key operational performance measures in key areas of the program to enable articulation of demonstrable changes before and after new system/application implementation. This should be complemented by enhanced benefits realisation reporting capability and responsibility for reporting to project governance board. It is acknowledged that resources are unlikely to be available for all projects to participate in this.

8.4   Change and Adoption

There needs to be a defined change and adoption strategy which encompasses the breadth of projects and implementation sites. The responsibility for change management should reside with the Health Information Network which is best placed to provide coordinated site support and engagement.

Other key features of change and adoption include:

- The Business Readiness and Training Sub-Committee may be placed to govern and coordinate change and adoption matters across WA Health. It is noted that this sub-committee has not been active to date.

- Requirement for chief executive approval of site readiness assessments in order to proceed to subsequent project plans. This may be supported by use of defined criteria for approval.

- Quarantined budget to support backfill of clinical/hospital staff required for change management.

8.5   Health informatics

To complement change and adoption activities, there is a need to build health informatics capacity across WA Health. Health informaticians are clinicians (medical/nursing/allied health) who have a strong understanding of "the organisation of medical information, the effective management of information using computer technology, and the impact of such technology on medical research, education and patient care."[5] A dedicated Health Informatics Team of 3-5 health informaticians would be appointed with the Health Information Network and be placed to work cooperatively with information technology specialists and clinicians alike to assist with system/application design and support change management.

8.6   Workforce

The Health Information Network should lead the development of an information technology workforce strategy across WA Health. The workforce strategy would aim to address the following workforce issues identified by the Review Panel:

- There are leaderships risks in the organisational structure and great reliance on the skills, knowledge and experience of the Acting Chief Information Officer (contracted to WA Health);

- There is a need to maximise the use of public servants and contractors to positions/projects. Without appropriate mix and alignment to tasks, there are risks of misaligned incentives which will result in performance management issues.

- There are public sector recruitment and retention challenges in Western Australia. This is particularly relevant for highly specialised roles such as project management and architects.

- There are also issues with contractor turnover which challenge project stability.

Given this, the workforce strategy should encompass:

- Health ICT recruitment and retention.

- Plans for the engagement of contractors. As this is inevitable, options should be explored for the use of a major systems integrator partner to facilitate coordinated engagement.

- Plans for the backfilling of health service staff that take on implementation roles. There should be dedicated resources for this.

- Enhanced contracting and knowledge management.

The Review Panel note the tight timelines for the ICT program. As such, it is imperative that the program internally resourced to meet demands.

---

[5] Columbia University

8.7   Information technology finance

The scale and complexity of the WA Health ICT Strategy highlights the need for a new role in information technology financing which is located within the Health Information Network. This appointee would have an understanding of information technology projects in addition to core budgeting and finance skills. The aim would be to better link financial management and project delivery, and enable WA Health to greater capability to report at the project level.

The information technology finance position would be responsible for the following:

* Strategy financial management;

* Project budgeting and monitoring; and

* Financial reporting, with responsibility and established structures for liaison with the Department of Finance and Department of Treasury.

It is acknowledged that the combination of information technology and finance are a specialist skill set; however the creation and recruitment of this role is a risk mitigation strategy.

8.8   Communications

The Review Panel noted that there are issues in relation to the accessibility of the language used in the ICT documentation, including the business cases. This challenged the Panel's ability to interpret the key features of the systems/applications and proposed approach. Consistent with the experience of the expert Review Panel, these issues were also reported by various internal and external stakeholders. Of a particular note, there is a need to emphasise the internal communication requirements to secure funding and investment confidence.

As such, there is a need for the Health Information Network to establish a dedicated communications team which would be responsible for preparation of tailored messages and structured communications such as newsletters for all stakeholders. This is considered critical to updating on ICT progress, promoting achievements and managing expectations. The communications team would work collaboratively with technical specialists.

8.9   Procurement and vendor management

Implementation of the ICT strategy will inevitably involve the use of suppliers and contractors. This is particularly relevant to the commissioning of Fiona Stanley Hospital which has established an agreement with Serco Australia to provide facilities management services which include the provision of linked ICT systems.

As such there is a need for high-level skills in procurement and vendor management. WA Health and the Health Information Network have variable experience and capacity in ICT procurement and vendor management. As such there is a need to increase skills, knowledge and experience in these areas.

9 WA Health ICT Action Plan

The Review Panel has identified a number of issues and has proposed recommendations for improvement. These have been summarised into an action plan for the short term.

Area	Recommendation	Timeframe
Strategy and Priorities	1. Define the critical path for Health ICT.	February 2012
	2. Define the suite of systems/applications to be implemented at each hospital and health service.	March 2012
	3. Define which of the 150-200 clinical specialty systems (for example, for cardiology, renal and cancer services) will be retained and where they will be implemented.	July 2012
	4. Advance medications management component of the Clinical Information System.	January 2012
	5. Prepare a revised 4-year budget based on the scope and phasing recommendations of the Review Panel.	January 2012
Fiona Stanley Hospital Strategy and Governance	6. Develop a detailed, integrated ICT Plan for Fiona Stanley Hospital, incorporating interdependent activities and timelines in relation to Serco Australia and the Health Information Network to ensure that ICT developments are linked to construction schedule.	February 2012
	7. Define the clinical processes which incorporate new systems/applications. This should be led by the Health Information Network in partnership with South Metropolitan Area Health Service.	July 2012
	8. Define 'paperlite' workflows for clinical and non-clinical areas.	July 2012

Area	Recommendation	Timeframe
	9. Establish governance structures which hold accountability and authority for Fiona Stanley Hospital ICT.	January 2012
	10. Establish a dedicated ICT Project Control Group for Fiona Stanley Hospital. This will be at the working level.	January 2012
	11. Establish an ICT Program Management Office for Fiona Stanley Hospital ICT within the Health Information Network with clear prominence in organisational structure.	January 2012
Business Cases	12. Laboratory Information System business case actions: • Instead of seeking two separate systems as specified in the Business Case, consider a single Laboratory Information System to simplify the implementation task. Existing systems are adequate without the need to pursue a more complex approach at this stage. • Prioritise for implementation in the short term. A whole of PathWest implementation is required as opposed to an incremental implementation. • Review Commonwealth Medicare online billing in relation to sourcing it in the Laboratory Information System or the current generic billing system implementation. • Finalise the Laboratory Information System business case. • Following business case approval, proceed with tendering as a priority. It is noted that the requirements and Request for Tender documentation have been developed in preparation for this.	March 2012
	13. Review state-wide Imaging business case with consideration of recommendations for delayed implementation.	July 2012

Area	Recommendation	Timeframe
	14. Develop a strategy for clinical information system/electronic medical record for implementation is at Fiona Stanley Hospital should be developed to reflect the narrowed scope and reduced implementation risk.	March 2012
	15. Review the scope of the Portal and Interoperability business case to prioritise the establishment of the Clinical Portal (only), Enterprise Service Bus and Identity and Access Management.	March 2012
	16. Patient Administration System business case actions: • Prioritise for implementation over an extended timeframe, specifically December 2015. The Review Panel acknowledge the dependency on the successful Enterprise Service Bus implementation to strategically decouple other applications from the PAS. • Integrate planning to align timeframes in relation to WebPAS implementation, commissioning of Fiona Stanley Hospital and obligations under the agreement with Serco Australia.	March 2012
	17. Implement the Health Identifiers business case following development of a details implementation plan.	March 2012
	18. Implement the Human Resources and Payroll business case.	March 2012
	19. Undertake further specification and justification of investment in Infrastructure Facilities. It is expected that once the business cases are updated this will need to be reviewed and realigned to ensure the infrastructure is capable of supporting the roll out of applications.	March 2012

Area	Recommendation	Timeframe
	20. Finalise the Infrastructure Refresh business case. This should include rationales, standards and ratios, and alignment with the priority project investments.	March 2012
Governance	21. Establish an enhanced governance structure which includes a WA eHealth Board (chaired by the Director General, Department of Health, with central agencies, a clinician representative, and independent experts). The Board would have responsibility for strategy and have the accountability/authority to amend the program scope and timelines. This board would be advised by a Clinical Consultative Council.	January 2012
Structure and Capability	22. Establish a mature and dedicated ICT Program Management Office within the Health Information Network with clear prominence in organisational structure. Actions: • Apply a portfolio management perspective to priority projects; and • Adopt standardised project management methodology and milestone reporting. Individual project plans should be overlayed to support analysis of interdependencies across the projects.	January 2012
	23. Conduct a baseline measure of key operational performance measures to enable articulation of demonstrable changes before and after new system/application implementation. It is acknowledged that resources are unlikely to be available for all projects to participate in this.	July 2012
	24. Develop a defined change and adoption strategy which encompasses the breadth of projects and sites for implementation.	January 2012

Area	Recommendation	Timeframe
	25. Recruit a Health Informatics Team of 3-5 health informaticians. This capability will assist the Health Information Network with the design and implementation of new systems/applications, and ensure they meet clinician needs	July 2012
	26. Develop an information technology workforce strategy across WA Health.	July 2012
	27. Strengthen financial monitoring through a specialist finance IT position. The appointee would have an understanding of information technology projects in addition to core budgeting and finance skills.	July 2012
	28. Establish a dedicated ICT communications team.	July 2012
	29. Strengthen skills in IT procurement, vendor management and project financial management and reporting.	July 2012

A   Appendix: Scope of the Review

1) Review priorities and systems/applications for ICT investment identified by WA Health, and advise:

   a) Whether all priorities and systems/applications are necessary;

      i) To support the commissioning of the Fiona Stanley Hospital (FSH) in 2014;

      ii) To satisfy requirements under the State's agreement with Serco Australia, the FSH Facilities manager, relating to the provision of linked ICT systems at FSH.

   b) Whether there are any gaps in the priorities and system/applications identified by WA Health that are necessary to achieve either (i) or (ii) above;

   c) Which ICT systems and applications proposed for FSH should be considered for State-wide implementation, and in relation to these systems and applications;

      i) Identify those systems and applications that are critical to the effective and efficient functioning of WA Health (FSH and at other hospitals);

      ii) Identify options for the phasing of investment and implementation; and

      iii) Advise on the consequence for the efficient and effective management of the WA health system of phasing options.

   d) Whether business cases for ICT investment prepared by WA Health are ;

      i) Deliverable within their stipulated timeframes;

      ii) Correctly prioritised;

      iii) Based on proposed applications and systems for implementation;

      iv) Informed by market availability and testing;

      v) Properly identify implementation risks; and

      vi) Propose appropriate implementation risk management measures.

2) Assess and advice on WA Health's preparedness to procure implement and risk manage investment in Health ICT that is approved by the Government.

3) Provide a report to the WA Government by the agreed date.

B   Appendix: Information Sources

The following information were provided to Review Panel in either electronic or hard copy format.

- Albany Health Campus ICT Services Plan – Draft (V1.03)

- Application Approach – Update under review

- Business cases

    o   Infrastructure Facilities (V2.0)

    o   State-wide Imaging (V2.0)

    o   Clinical Workbench (Clinical Information System and Electronic Medical Record) (V2.0)

    o   Laboratory Information System Replacement Project (V2.1)

    o   State-wide Patient Administration Replacement Project (V2.0)

    o   Human Resources System Replacement Project (V2.0)

    o   Health Identifiers (V2.0)

    o   Portal and Interoperability (V2.0)

    o   Infrastructure Refresh Program (V2.0)

- Communication Protocols for Fiona Stanley Hospital Project (V1.0)

- eHealth WA Project Council Terms of Reference (V1.1)

- Department of Health ICT Strategy 2010-2020 (V2.1)

- Department of Health ICT Strategy 2010-2020 Appendices (V2.0)

- Department of Health ICT Strategy 2010-2020 - Notes to Accompany the Capital Budget (V2.0)

- Fiona Stanley Hospital – Summary of Facilities Management services Contract (July 2011)

- Fiona Stanley Hospital Overview of FM Contract (presentation)

- Health Information Network Organisational Structure Charts

- ICT Scope for Fiona Stanley Hospital (presentation)

- Notes to accompany business cases - Consolidated Benefits - Department of Health ICT Strategy 2010-2020 (V2.0)

- Program Update – New Core CIS – Project Achievements and Status (presentation)

- Release 2 (Interoperability) High Level Design (draft)

- Serco documents

- o BT Australasia – Project Implementation Plan (Draft)
- o Fiona Stanley Hospital (Health Information Network) (HIN) – Client Services Brief (Draft)
- o Fiona Stanley Hospital BT ICT Program – Level O (V5)
- o Fiona Stanley Hospital High Level Timeline
- o ICT Management Plan
- o Fiona Stanley Hospital – Specific Service Specification: Audio Visual Service
- o Fiona Stanley Hospital – Audio Visual Service Plan
- o Fiona Stanley Hospital – Patient entertainment service plan
- o Electronic Records Management Service Plan
- o Health Record Management Clinical Coding Service Plan
- o ICT Service Plan
- o ICT Service Solutions Description
- o Scheduling and Billing Service Plan
- Summary of Fiona Stanley Hospital ICT (presentation)
- WA Department of ICT Strategy 2010-2020 – External Review (presentation)
- WA Health Architecture Reference Framework (V1.7)
- WA Health Information and Communications Technology (ICT) Government Structure, August 2011 (V1.5)
- WA Health ICT Strategy – Business Case Package (presentation to SHEF)
- Health Information Network models (spreadsheets)
- WA Health Clinical Services Framework 2010-2020