NSW GOVERNMENT | Health

St Vincent's Health Network Sydney

Capital Investment Proposal

Enterprise Electronic Medical Record

2022

1. PROPOSAL OVERVIEW

1.1   Organisation Details

Organisation:	St Vincent's Health Network Sydney
Contact Officer:	Mr. Chris Ball
Position:	Executive Director of Innovation & Improvement
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1.2   Proposal Details

Proposal name:	Enterprise Electronic Medical Record (EMR)

1.3   Relevant Documents and Current Planning Status

The EMR preparatory activities and planning have been initiated by St Vincent's Health Australia in anticipation of an approved EMR Program. The purpose of these activities is to address key organisational dependencies, de-risk the program, inform the program implementation approach, and embed the EMR into all strategic planning.

A governance structure and project team have been established to oversee the preparatory activities. An Implementation Planning Study (IPS) has been finalised with the preferred vendor.

Document	Status
Discovery and scope	100% - Date: May 2020
EMR Business Case SVHNS	100% - Date: Feb 2021
Technical Plan	100% - Date: May 2021
Risk Assessment and Management	100% - Date: May 2021
Strategic Planning	100% - Date: May 2021
Change Management Strategy	100% - Date: May 2021
Training Strategy	100% - Date: May 2021
Communication Strategy	100% - Date: May 2021
Governance framework	100% - Date: May 2021
IPS report	100% - Date: June 2021

1.4   Consultation

The following stakeholders have been consulted in the development of this Investment Proposal:

Name	Organisation	Role
Anthony Schembri	St Vincent's Health Network Sydney	Chief Executive Officer
Chris Ball	St Vincent's Health Network Sydney	Director, Innovation & Improvement
Anna McFadgen	St Vincent's Health Network Sydney	Director, Strategy, Planning and Partnership
Allison Harle	St Vincent's Health Australia	Director EMR Program
Tony Abbenante	St Vincent's Health Australia	Senior EMR Advisor
Eileen Hamblin	St Vincent's Health Australia	Senior EMR Advisor
Mona Illari	St Vincent's Health Australia	Senior EMR Advisor
Zoran Bolevich	NSW eHealth	Chief Executive Officer
Andrew Perkins	NSW eHealth	Director, Investment, Strategy & Architecture
Mark Simpson	NSW eHealth	Chief Clinical Information Officer
Toby Mathieson	NSW eHealth	Director ICT Investment Management
Saurin Shah	NSW eHealth	Customer Account Manager

1.5   Board Endorsement

Has the Organisation's governing board endorsed this proposal?   Yes [✓]   No [ ]

1.6   Chief Executive Approval

Name: A/Professor Anthony M. Schembri

Position: Chief Executive Officer St Vincent's Health Network Sydney

Signature: _A.M. Sch._

2. PROPOSAL DESCRIPTION

2.1 Proposal Description

St Vincent's Health Network Sydney (SVHNS) is a nominated specialty health network in the NSW public health system and the only non-government network in NSW delivering a range of state-wide services of significance to the residents and visitors of NSW. St Vincent's Hospital Sydney, Sacred Heart Health Service and St Joseph's Hospital Auburn are Affiliated Health Organisations under the *Health Services Act*.

This proposal outlines the scope, benefits and funding for the procurement and implementation of an Enterprise Electronic Medical Record (EMR) for St Vincent's Health Network Sydney (SVHNS) that includes a wholly integrated web based EMR and Patient Administration System (PAS), with full mobility and interoperability.

SVHNS is seeking a one-off capital investment of **$50 million** from the NSW Government to implement an integrated PAS/ EMR in SVHNS hospitals, comprising 80% of the capital cost. The investment is sought over a three-year period, that is, $16.67 million per year. SVHNS will self-fund the remaining investment required to implement of $13 million.

2.2 Investment Drivers

Whilst St Vincent's maintains its reputation for the delivery of high-quality care to its patients, the organisation currently faces several clinical information and system challenges that relate directly to the lack of an integrated enterprise EMR. SVHNS is currently significantly hindered in optimising patient care, clinical time, and operational performance due to the reliance on a hybrid of paper-based records, and disparate and ageing clinical applications.

Current high-risk areas and service gaps include the Patient Administration System (CorePAS) which is end of life and a priority for replacement; the Emergency Department's need for a modern digital system (critical); the requirement for a scheduling and documentation system for outpatient visits; and a scanning solution for the organisation. Extracting real time aggregated data for operational and clinical decision making is not currently possible. Structured data from a longitudinal clinical record to support research and drive improvements in care is not available. Importantly SVHNS has a limited capability for clinical data sharing with other public hospitals (e.g., patient referrals and historical treatment) creating clinical risk for both SVHNS and other Local Health Districts.

The NSW public that SVHNS services is changing in terms of their demographics, health and well-being needs, and expectations of the healthcare system. This in turn is placing additional demand, cost, and workforce pressures on the health system. Concurrent to these changes are emerging models of care that are placing increased focus on prevention; there is a shift towards ambulatory and community care to reduce demand on inpatient services and a drive for greater equity of access to healthcare services; and critically better integration and coordination of care delivery across the health sector required. These shifts are occurring within an environment of accelerating innovation (e.g., precision medicine, mobility, predictive analytics, artificial intelligence, wearable health devices, increased use of genetic medicine), which are disrupting the way healthcare is delivered.

Effectively responding to these challenges and the opportunities they create requires a contemporary enterprise EMR environment that will provide the right clinical information and tools, to the right person, at the right place and time, to support the delivery of high-quality and integrated person-centred care. Such an environment is critical to efficient and sustainable healthcare delivery and supporting a productive and engaged workforce.

Whilst numerous patient quality and safety benefits will be realised with this program, anticipated measurable operational and financial benefits of this proposal include reduced length of stay; increased theatre utilisation; reduced costs for printing of forms and storage; reduction in pathology tests and medical imaging orders; increased private revenue capture; a reduction in avoidable re-admissions; and a reduction in software and associated costs for applications that would be decommissioned.

Continuing with the status quo is not viable for many reasons and hence the urgency in this proposal. From a patient perspective the status quo means a reduced ability for SVHNS to respond to changing patient needs and models of care to support them. From a clinical perspective the status quo puts pressure on staff to assemble and then share the patient record given the use of many disparate systems and paper. This increases the risk of critical information being unavailable at point of care for decision making, and increases clinical time spent on clerical functions instead of focusing on patients. This in turn leads to staff despondency and demotivation. From an operational perspective the status quo reduces SVHNS ability to source and utilise data in a timely way to respond to changes in the healthcare environment and support the wider NSW healthcare system. The ongoing COVID pandemic highlights the need for healthcare services to be agile and responsive both operationally and technologically to adapt to changes. From a financial perspective further investment in the status quo systems would be a poor application of capital funds. Even at their most contemporary versions/platforms the combined applications fail to yield the ongoing benefits associated with an integrated modern EMR. Lastly from a technology perspective the status quo is a variant mix of applications and platforms, which means clinical and administrative staff need to access many varied systems to perform their daily workload. There is greater risk of planned and unplanned outages. A single, resilient, hosted, web based EMR removes accessibility issues, creates mobility benefits, and provides a single user interface to work with.

Given this need for a single integrated modern EMR solution, the longer it takes for SVHNS to move forward with an EMR, the further behind SVHNS will be in terms of their healthcare capability versus peers in NSW, nationally and internationally.

2.3   Options Considered

St Vincent's Clinical Information strategy highlights the need for the organisation to progress with an EMR and as such, the following options have been considered:

1. Do Nothing – Retain existing systems and technical environments
2. Replace the PAS and upgrade existing clinical systems
3. Replace the PAS and adopt the State Single Digital Patient Record (SDPR) build (South East Sydney Local Health District [SESLHD])
4. Implement an integrated enterprise PAS and EMR solution

The options assessment process considered several factors, including:

- An urgent requirement to replace both the ageing 'DeLacy' clinical system and the end of life 'CorePAS' solution
- A requirement to present information to clinicians in an integrated view with seamless information flow
- The need to support cross campus administrative and clinical workflows for contracted services between the public and adjacent private facilities
- A requirement for a resilient (high availability) solution that has robust business continuity processes to support both planned and unplanned downtimes

- The ability to support existing and new models of care including virtual care
- The requirement for comprehensive reporting capabilities and data analytics to satisfy statutory, legislative, management, research and clinical needs including decision support e.g., sepsis, falls risk, suicide algorithms
- A modern platform that supports current and future innovation and new technologies
- A solution that supports alignment with National and State standards and initiatives
- A solution that is financially viable to implement, maintain and support.

From a strategic assessment the preferred option for St Vincent's has been determined as **Option 4: Implement an integrated enterprise PAS and EMR.**

The following information (Table 1) summarises the options considered based on of the following assessment criteria: capital costs, delivery time, technical standards alignment, legislative requirements, and sustainability profile. These metrics were used to determine the overall ranking. Further information on the options assessment process is in the SVHNS PAS/EMR Business case.

Table 1: Option Analysis Ranking

Options	#1 Do nothing / status quo	#2 Replace PAS and upgrade existing systems	#3 Replace PAS and adopt State SDPR build	#4 Pursue integrated enterprise EMR and PAS
Capital Costs	Medium	High	High	Medium
Delivery Time	NA	2.5 Years	3 Years	2 Years
Technical Standards	Low	Low	Medium	High
Legislative Requirements	Low	Low	Medium	High
Sustainability Assessment	Low	Low	Medium	High
Risk Profile	High	High	High	Medium
Ranking	4	3	2	1

The implementation planning study completed in July 2021 was an important phase in St Vincent's EMR journey, helping to socialise the proposed EMR solution and capability with a wide variety of stakeholders across clinical, technical and administrative work streams. This phase has also been instrumental in helping to identify potential gaps and mitigations, and to confirm the scope, cost and implementation approach to inform the discernment process.

3. STRATEGIC ALIGNMENT OF PREFERRED OPTION

3.1 Strategic need and benefit

Alignment with NSW Government Priorities:

This SVHNS EMR Program is strongly aligned with government priorities. The alignment between this project and the objectives of the NSW Government are considered below.

NSW Premier's Priorities[1]

Adoption of the EMR across SVHNS will enable better support of the following priorities to improve the Health System outlined by the Premier of NSW:

- Improving service levels in hospitals
- Improving outpatient and community care
- Towards zero suicides.

The significant improvement that will be available through the EMR in creating longitudinal patient records of care, managing and monitoring care delivery and digitally engaging with other health and community care providers will result in SVHNS making an active contribution towards the achievement of these priorities.

As outlined in the aim to improve outpatient and community care, the SVHNS EMR will provide clinicians with the tools and insights to proactively manage patient care while also facilitating options for remote and virtual care.

NSW State Health Plan: Towards 2021[2]

In the NSW State Health Plan, the NSW Ministry for Health outlines two key areas relevant to this SVHNS EMR business case:

- Supporting and harnessing research and innovation

  The implementation of the EMR will provide extended opportunities for research through access to a comprehensive data set aligned with relevant terminologies and standards.

- Enabling eHealth

  NSW Health is using technology to support the healthcare system as it changes and evolves, embedding eHealth into everyday models of care that help link patients, service providers and communities in a connected, smarter, healthcare system. Implementation of the EMR will enable greater participation of SVHS in the digital health ecosystem that is being established across the state.

NSW Rural Health Plan: Towards 2021[3]

As outlined in this Plan, NSW Health aims to provide world class care as close to home as possible for people in rural communities. The NSW Rural Health Plan will continue to build on the significant achievements made in recent years and aims to further develop capacity and opportunities in rural health services.

The capability available in the proposed SVHNS EMR will enable greater collaboration with rural clinicians and facilitate remote engagement with patients thereby providing the most appropriate care with a patient focus.

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[1] Premier's Priorities, NSW Government

[2] NSW State Health Plan: Towards 2021, NSW Ministry of Health, 2014

[3] NSW State Rural Health Plan: Towards 2021, NSW Ministry of Health, 2014

eHealth Strategy for NSW Health 2016 – 2026[4]

The premise of this strategy is "A digitally enabled and integrated health system delivering patient-centred health experiences and quality health outcomes". It has been developed to deliver world-class, eHealth-enabled healthcare services across NSW over the future decade.

It sets the framework for investment to meet the growing demand. The scope and objectives of the SVHNS EMR Program addresses the following focus areas outlined in the Strategy – Core Clinical Systems; Integrated Care Solutions; Data and Analytics; Access to Information; Infrastructure, Security and Intelligence; and Innovation.

Without investment in the EMR Program, SVHNS will have limited influence and participation in such eHealth advancements. Delay in this investment will make the transition more complex than the current situation.

Clinical Engagement and Patient Safety[5]

eHealth NSW's Clinical Engagement and Patient Safety team seeks to improve the usability, usefulness, safety and efficiency of our digital solutions for clinicians by seeking their input and providing analysis, advice and design support.

Clinical engagement and patient safety are two of the key pillars of the SVHNS EMR Program and areas where significant benefits are expected to be realised. Without the EMR, SVHNS would not be positioned to address either of these imperatives.

NSW Health Telehealth Framework and Implementation Strategy 2016-2021

Telehealth is particularly important in rural, remote and regional areas of NSW. Embedding sustainable telehealth services into the NSW Health system will support delivery of patient-centred care in the right place, at the right time. Telehealth, as the delivery of health care at a distance using tools ranging from web-based videoconferencing to wearable technologies, complements face-to-face consultation and offers significant benefits for patients, their carers, health care workers and the health system.

As a specialist tertiary referral centre, both telehealth and virtual care for patients will be facilitated by the SVHNS EMR enabling Sydney-based clinicians to engage with and monitor care for patients across the state. This strategy aligns with the principles of the NSW Rural Health Plan.

NSW Health and Medical Research Strategic Plan

NSW Health is focused on providing researchers, clinicians, managers and policy makers with the tools they need to translate research into innovative policy and practice to create healthier communities and deliver better patient care.

The integration of health and medical research in the health system supports innovation, builds a strong culture of continuous improvement to ensure we deliver the best evidence-based health care for Australians and is crucial for ensuring the health system's efficiency and sustainability.

The St Vincent's Research Campus, including Garvan Institute of Medical Research, Victor Chang Cardiac Research Institute and the St Vincent's Centre for Applied Medical Science have pioneered insights into some of the most widespread diseases affecting our community today. Access to the comprehensive longitudinal data set that will be created as an outcome for the implementation of the SVHS EMR will provide broader benefits to the research community.

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[4] eHealth Strategy for NSW Health 2016-2020, NSW Government Health, 2016

[5] Clinical Engagement and Patient Safety, eHealth NSW Government

NSW Homelessness Strategy 2018-2023

One of the tenets of this Strategy is to establish an integrated person-centred service system. The aim is to put people at the centre of the system, so they get the right help at the right time.

With support of the EMR, SVHNS will be able to continue their mission of helping more effectively the homeless by contributing to their wellbeing and providing continuous care in the context of their overall health status.

Strategic Framework for Suicide Prevention in NSW 2018-2023[6]

Establishment of the SVHNS EMR will enable better contribution to the key priority areas outlined in this Framework, specifically, "Supporting excellence in clinical services and care" and "Promoting a collaborative, co-ordinated and integrated approach".

Availability of a longitudinal record of care that can be shared with other services will allow care to be co-ordinated and managed more effectively. It will also facilitate engagement with primary care services and broader state-wide initiatives to establish a more holistic approach.

Australia's Digital Health Strategy: Safe, Seamless and Secure

As outlined in this Strategy, digital information is the bedrock of high-quality healthcare. The benefits for patients are significant and compelling: hospital admissions avoided, fewer adverse drug events, reduced duplication of tests, better co-ordination of care for people with chronic and complex conditions and better informed treatment decisions.

Implementation of the SVHNS EMR will allow the hospital to be an active participant in Australia's digital health advances. The current environment limits the contribution that can be made given lack of relevant tools and infrastructure to engage.

National Innovation and Science Agenda[7]

Extraordinary technological change is transforming how we live, work, communicate and pursue good ideas. The National Innovation and Science Agenda aims to embrace new ideas in innovation and science, and harness new sources of growth to deliver the next age of economic prosperity in Australia.

Implementing a SVHNS EMR program is a key enabler for advanced research and innovation. The EMR will enable SVHNS to maintain and leverage its current strengths as a world-class centre for research.

National Standards

National and State standards and other legislative requirements mandate working towards compliance in several areas that are further supported with the scope and deliverables of an enterprise EMR:

- Upload of clinical documents in the appropriate digital formats to My Health Record
- Use of standardised terminology such as AMT (Australian Medicines Terminology) and SNOMED CT (clinical terms) to share a patient's clinical information consistently, securely and safely with authorised clinicians in other settings
- Adoption of real time prescription monitoring (access to up-to-date prescription history to reduce overdose and identify patients at risk of dependency) which will only be possible through implementation of electronic medication management via the EMR
- An effective quality improvement system operating across the organisation.

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[6] Strategic Framework for Suicide Prevention in NSW 2018-2023, Mental Health Commission of NSW, 2018

[7] National Innovation and Science Agenda, Commonwealth of Australia, 2015

Alignment with NSW Treasury outcomes budgeting frameworks:

This Service level agreements (SLA) between the NSW Government and SVHNS set out the service and performance expectations for funding and support to SVHNS.

The SLA embeds the NSW premiers' strategic priorities (discussed previously) as well as the NSW Health Strategic priorities in the agreement between SVHNS and NSW Health.

The below table identifies how investment in a PAS/EMR program will support SVHNS to deliver these priorities:

Table 2: NSW Health Strategic Priorities (within SLA) and how PAS/EMR supports outcomes

Strategic Priority	PAS/ EMR
Keep People Healthy	Health initiatives in Drug and Alcohol; Tobacco (1.2); Infectious diseases (1.3) as well as support for ATSI based services (1.4) will benefit from a single longitudinal record that allows better data capture and utilisation.
Provide World Class Clinical Care where patient safety is first	EMR will support increased use of data and analytics to drive reform (2.5); improve patient experience and engagement through use of an EMR patient portal (2.3); as well as continuing to deliver high quality and safe patient care by providing clinical information and decision support at the point of care (2.1)
Integrate Systems to deliver truly connected care	By investing in a single longitudinal EMR with modern interoperability functions this will enable integration to other systems both within and external to SVHNS and sharing of data in a structured and standardised manner.
Deliver and support our people, culture, and governance	By providing clinical and administrative staff the right tools, the EMR supports people and workflows ensuring a motivated and integrated workforce and culture. Effective policy and procedure can be embedded within electronic workflows.
Support and Harness Health and Medical Research and Innovation	An EMR at SVHNS will support NSW's goal to become a leader in clinical trials by allowing faster identification of potential patients, as well as supporting the level of auditing required as part of a sponsored trial. Enhanced data capture and utilisation will support research (5.3, 5.4 and 5.5)
Embed a digitally enabled healthcare system	An EMR will remove paper (6.1), support integrated health service delivery (6.2), enhance business workflow and management (6.3), improve health analytics and decision making (6.4), enhance patient, provider, and research communities' access to data (6.5) and through delivery of a hosted, resilient cloud-based service improve security and infrastructure (6.6)
Build financial stability and deliver business improvements	The approach of procuring a common platform and system across SVHA supports the goal of 'value in procurement' (8.3)

The EMR will support SVHNS to deliver on the targets within the 'NSW Health Outcomes and Business Plan' (2019- 2023) embedded in the SLA.

- Keeping people healthy through prevention and health promotion
- Patient access to care in or out of hospital settings to manage their health and well being
- Timely Emergency Care
- High quality safe care within our hospitals
- Continuously improving systems and people to deliver the best health outcomes and experiences

A single longitudinal electronic patient record, with a patient portal, integrated to key internal and external systems (including Pathology, Medical Imaging and Pharmacy), with embedded decision support and reporting/business intelligence (BI) capabilities will support all of these.

Demonstrate a clear service need backed with evidence:

The EMR enables St Vincent's to deliver a more sustainable and quality health service delivery with patients at the centre. It will enable improvements in patient care, and these are demonstrated as per the Australian Commission on Safety and Quality in Health Care, outlined in Table 3.

Table 3: ACSQHC EMR Aligned Benefits

National Standard	Description	EMR Derived Benefit
	1. Clinical Governance	An EMR provides support for problem-based clinical pathways / care plans to guide the care delivery process and articulate standards. Data is available to assess outcomes and monitor processes and deviations. Clinical Decision Support systems enable the early identification of patients that are at increased risk of harm. For example, decision support systems can be used to identify patients with sepsis or acute kidney injury (AKI), and notification flagged to clinicians. An EMR can also be used to provide a consistent approach to recording of patient consent and advanced care directives. Access is available to the clinical record at the point of care and information presented is controlled by a user's role and profile.
	2. Partnering with Consumers	Patient Portals that are linked to an EMR allow patients and their families greater participation in their own care. This is achieved through improved access to scheduled attendances, diagnostic results, clinical notes, care plans and relevant education material. Patient Portals also offer the opportunity for direct communication with care providers.
	3. Preventing & Controlling Healthcare Associated Infections	An EMR provides the capability to automate the identification and reporting processes of Hospital Acquired Infections. Clinical decision support, use of screening tools and consistent recording of alerts support monitoring activities. Access is available at the point of care to online resources and guidance from current therapeutic guidelines.
	4. Medication Safety	The ability to record patient medication history, patient allergies and identify adverse drug reactions in the EMR and provide access at the point of care is critical to quality care delivery. The utilisation of a standardised drug database / formulary for medication ordering ensures up-to-date decision support rules and accurate medication data are in place to avoid adverse drug events. Further, medication management and e-Prescribing functions will facilitate reduced drug administration and documentation errors by providing alerts and reminders about correct dosage, time and route.

National Standard	Description	EMR Derived Benefit
	5. Comprehensive Care	A falls risk assessment tool in an EMR is used to identify "at-risk" patients and minimise harm. Using clinical decision support, it can be allocated as an automated task based on criteria recorded about the patient. A falls incident report would be completed for each fall and an analytics dashboard used to provide details of Falls Assessment Completion and Fall Risk Level Analysis.
		Clinical documentation in an EMR can be used by the clinical workforce to document pressure injury screening. This documentation would be linked to appropriate clinical guidelines and applied to predisposed patient populations. This data would then be available for reporting and active monitoring.
		Sepsis algorithms embedded in the EMR monitor patients' vital signs and test results to identify and alert clinicians in the early signs of sepsis to support earlier interventions for better patient outcomes and reduced incidence of sepsis.
	6. Communicating for Safety	An EMR supported structured clinical handover process though provision of a standard format such as the Identify, Situation, Background, Assessment and Recommendation (ISBAR) format. It will underpin a standardised approach to documentation and availability of handover information.
		Reduction in incidents related to missed test results.
		Clinical Documentation functionality will aid the process of patient identification by ensuring that the patient information is available, accurate and complete. Consistent display of patient identification details at the point of care ensures care providers are aware of the specific patient.
		The use of appropriate tools to validate patient identification will also be critical in processes such as medication administration and specimen collection including the use of tools such as bar code scanners to validate that data matches.
	7. Blood Management	Clinical Decision Support systems built into an EMR minimise the use and associated risks of blood transfusions. This is achieved by ensuring that the tests are clinically necessary when ordered, through the ability to assess a patient's condition. Other available information can be utilised to determine if ordering a blood transfusion adheres with clinical guidelines. Adverse events can be appropriately documented and available for future reference.
	8. Recognising & Responding to Acute Deterioration	The use of Early Warning Scores (EWS) to identify deteriorating patients, with observation charts coded to indicate EWS parameters. An EMR may also incorporate notifications and escalations using decision support rules based on defined thresholds. Availability of recorded observations as structured data provides a resource for developing and refining the management and focus on deteriorating patients.

3.2   System and Service Transformation

The scope and the capability of the proposed Enterprise PAS/ EMR is broad and enables major system and service transformation. It will improve service delivery and provide integrated care with enhanced access to digital health information.

The below table (Table 4) describes the functions that will be procured as part of the project:

Table 4: EMR Implementation Functionality

Application Function	Description
PAS	Patient Master Index (PMI), Admission Discharges and Transfers (ADT), Outpatient Scheduling, Waiting List, Coding, Bed and Capacity Management, Statutory Reporting, Private and Public Billing (not including diagnostic billing), Patient correspondence.
Emergency Department	Registration, Admissions, Bed Management, Statutory Reporting, Clinical Notes and Diagnostic Ordering and Resulting, Treatment Summaries (complimentary with current processes) including Short Stay (SSU), and Device monitoring integration.
Discharge Summaries	Generate and distribute Discharge Summaries to GPs / Specialists/ My Health Record (electronically).
Patient Journey Board	Manage criteria for revenue maximisation and patient clinical care regarding referrals, length of stay, patient flow, discharge processes and re-admission clinical criteria for patients across the organisation.
Operating Theatres/Surgery	Waiting List, Emergency Theatre Bookings, Clinical Notes, Procedures and Diagnosis, Statutory Reporting, Utilisation Tracking, Preference Cards, Voice Dictation.
Electronic Orders and Results	Electronic Pathology, Medical Imaging and Diagnostic Services Orders and Results Viewing/ Trending.
Referral Management (e-referrals)	This will include receiving (external) referral information to the National standard (CDA), receiving this to a triage queue, matching to existing patients with the clinical information in the eReferrals displayed in the EMR.
My Health Record	Discharge Summaries to MHR, Viewing MHR.
National Identifier Service	IHI lookup to support patient identification.
Telehealth support	EMR will support telehealth workflows.
Clinician Mobile Access	Access to the EMR solution can be provided both at SVHNS facilities and externally, and accessed via PC's, tablets and phones.
Clinical Documentation	Inpatient and Outpatient including Flowsheets, fluid balance, charting (growth, weight etc).
Device Integration	The EMR allows device integration via Capsule middleware (e.g., monitors, anaesthetic machines, pumps, ventilators).
Medications Management	Inpatient EMM & complex medications, administration, and reconciliation (not to unit dose level). Integrated with pharmacy systems and dispensing cabinets.
Labs - Specimen Collection and Blood Product Administration	Pathology specimen collection management. Interoperability with Lab systems for ordering and documenting Blood product administrations.
Consults (Internal)	Ability to request a consult from another speciality electronically
Standard Content and Decision Support	Medications Management (SNOMED-CT/AU, AMT) Clinical Decision Support (Drug to drug and drug to alert-allergy, Interaction checking), sepsis alerts, VTE etc.
Integration	Integration to Lab, Medical imaging, Oncology, Diagnostic, Maternal, and other systems using HL7 standards.
Mental Health – Inpatient	Generic EMR functions to support mental health patients, including clinical documentation, restricted record access, orders, results and reporting tools.
Intensive Care (ICU)/ HDU	Orders/Results, Medications Management and clinical EMR functionality (as defined above).
Anaesthetics	Anaesthetics, Orders, Medications Management and EMR functionality (as defined above) including device and cart integration.
Patient Portal	Communication portal to allow patients to review own record, request services and provide information to providers (e.g., Pre-admit data).

The EMR investment proposal considers the following high priority outcomes for NSW Health. Table 5 below identifies how the EMR investment will help transform these.

Table 5: System and Service Transformation

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Greater integration of primary, community based-services and early treatment	An EMR will support greater integration between primary and community-based services directly through use of e-referrals and electronic discharge summaries and correspondence. EMR data will feed into State systems like EDWARD and national systems like MHR to ensure data is shared across the health sector. The EMR has interoperability capabilities to other EMR's and community applications using HL7 standards.
How will the investment facilitate out-of-hospital care	The EMR can be accessed on any web enabled device allowing clinical staff to use in non-hospital locations. The EMR can integrate directly to capable external monitoring devices via the capsule middleware or to capable remote monitoring applications supporting HITH and community-based care. The EMR supports Telehealth integration as well as providing patient communication capabilities via the patient portal. These functions allow facilitation of out of hospital care models.
Impact on outpatient care, same day surgery and community health	Outpatient care will be streamlined with outpatient scheduling and effective management of resources, efficient processing of referrals (eReferrals), and access to the longitudinal patient record with "no gaps" in patient information. Clinical documentation will capture the required data for reporting purposes. EMR integration with virtual care solutions will support remote patient care with access to the full patient record for viewing, ordering, and documenting. SVHNS Community Health providers can access the EMR on mobile devices to support patient care. Same day surgery will be streamlined via ability to use patient portal to gather pre-admission data ahead of time, improved clinical documentation speed through dictated documentation, and electronic discharge medications sent to hospital or community pharmacy. With patient admissions commencing from the patient portal, patients at risk can be identified earlier to ensure that required interventions are undertaken before presentation to the hospital to reduce same day cancellations for surgery.
Decreasing avoidable ED presentations	The EMR will help decrease avoidable ED presentations post an inpatient admission by supporting accurate and timely clinical information to clinicians thus ensuring patients are suitable for discharge and reducing representation to ED. Clinical decision support will reduce errors that could cause a future representation, and the patient portal will allow a patient education facility post discharge to support rehabilitation at home. Timely electronic discharge summaries also allow primary providers to take over care more effectively post discharge again reducing representations to ED.
Adoption of virtual or telehealth models	The EMR can support integration with Telehealth providers. SVHA is currently looking at a virtual care platform and this has been discussed with the EMR vendor for interoperability strategies.

Optimising service delivery	The EMR will allow the right person to have the right information and tools at the right time for the right patient. This provides a platform for quality and service improvement initiatives both for go-live and into the future. An EMR provides data to allow SVHNS to continue to continually improve their service delivery.
Networked services, collaboration and sharing across the entire health system	EMR data will feed into State systems like EDWARD, HealtheNet and PFP, and national systems like MHR to ensure data is shared across the health sector. The EMR will utilise the IHI identifier to facilitate cross site care. E-referrals, e-discharge summaries and GP communications will ensure timely collaboration with the primary sector.
Non-capital solutions	The EMR program has looked at non-capital solutions to support the EMR delivery including a hosted infrastructure offering and managed application service. Unfortunately, there are no PAS or EMR offerings at this point in time that don't require a Capex investment to allow software purchase and implementation.

3.3   Sustainability and Efficiency

SVHNS goals for this EMR investment are to implement a single longitudinal patient record that improves patient care, increases clinical utility, and delivers measurable outcomes and benefits.

From an operational perspective SVHNS is seeking a sustainable investment that will provide ongoing efficiencies and a platform for future quality and service improvement initiates.

Our proposal has considered the below key criteria (Table 6):

Table 6: Sustainability and Efficiency

Whole of life cycle costs	The EMR proposal has considered the whole of life cycle costs for an EMR including EMR and third-party system licencing, project implementation resourcing, infrastructure to support the system, point of care devices, staff training and resourcing. EMR implementations are a known quantity in terms of deployment and running costs and the SVHNS project team has many years of implementation experience both nationally and internationally.
Recurrent impacts	The EMR proposal has sought to remove major recurrent impacts by moving the infrastructure component to a hosted model (Macquarie Cloud Services) and the support component to a vendor supplied model. This ensures major recurrent capital impacts are minimised and SVHNS has a known Opex spend quoted and agreed with vendors in advance.

Flexible Investment	The EMR will allow SVHNS a flexible platform to add further EMR modules to in future (if required) or integrate with other systems as required around a central EMR core. The EMR tender response by the EMR vendor allows an initial contract period with option to renew at a known price (4 x 4 year). Hosted infrastructure allows flexible uplift to larger specifications or storage as required quickly and efficiently.
Asset lifecycle considerations	EMR vendors have been around since ~1970's and have a long history of research and development in their products. As such we expect the EMR vendor to grow and improve their software (our asset) into the future. The Infrastructure asset is not owned by SVHNS and as such will also be updated based on SLA's to remain contemporary. SVHNS will need to ensure point of care devices are kept updated in line with natural lifecycle and EMR recommendations. SVHNS will refresh their EMR point of care devices with the go-live of the EMR. SVHA is on a pathway to replace its local and wide area networks to support contemporary services including medical grade wired and wireless networks. Part A of this program will replace all Wide Area Networks, including fixed and mobile telephony with a single vendor. This initiative is in the early stages of implementation and will be completed in advance of an EMR implementation. Part B of this program will deliver medical grade wired and wireless networks transforming and upgrading the necessary hardware and software, both in facilities and at the foundations, to deliver and manage a medical grade LAN and Wi-Fi network.
Environmental impact	A move to an EMR will reduce the environmental impact of SVHNS by removing large amounts of paper from workflow and processes. The energy and infrastructure footprint of SVHNS is expected to be reduced as move from multiple systems across multiple sites to a single shared EMR. The digitisation of the record will allow care delivery outside the hospital thus reducing climate emissions from patient and staff travel.
Preparedness for unplanned high impact events	The move to a single resilient (high availability) EMR system with disaster recovery at a Tier 1 datacentre utilising modern cybersecurity, infrastructure and software will ensure that SVHNS is prepared to industry best practice standards for unplanned high impact events.

4. ESTIMATED CAPITAL COST

4.1 Capital Cost Estimate

SVHNS is requesting that the NSW Ministry of Health fund **$50 million** or **80%** of the NSW Capital component of this PAS/EMR project as a capital investment.

The total capital cost for the Enterprise PAS/ EMR implementation at SVHNS is **$63 million.** This includes implementation at three hospital facilities – St Vincent's Public Hospital in Darlinghurst, Sacred Heart Health Service in Darlinghurst, and St Joseph's Hospital in Auburn.

This SVHNS capital investment proposal is seeking a one-off capital investment from NSW Health of **$50 million** (80% contribution). The investment is sought over a three-year period (16.7m per year). SVHNS will invest the remaining capital funds to implement of **$13 million**. It is noted that the duration of the annual contribution can be varied to suit the NSW Ministry, for example, this could be over three or four years.

The table below shows the overall EMR Program cost allocation including funding requests of Government and includes risk and contingency allocations.

Table 7: Capital Cost Distribution for SVHNS

Capital Expenditure by Entity	YEAR 1	YEAR 2	YEAR 3	Capex Cost
St Vincent's Health New South Wales	$4.2m	$4.2m	$4.2m	$12.5m
New South Wales Government	$16.7m	$16.7m	$16.7m	$50.0m
TOTAL CAPITAL COST	$20.9m	$20.9m	$20.9m	$62.5m

Table 8: Ten Year Total Cost of Ownership – Government Funding Request

Cost Category	Total Capex NSW Public	NSW Health Capex Request
Program Resources - St Vincent's	$16.5m	$13m
Device Integration & EMR Peripherals	$4m	$3.5m
Hosting and Application Management	$2m	$1.5m
Training and Activation Support	$5.5m	$4.5m
Assurance, Advisory, Project Office Expenses	$8m	$6m
Vendor Implementation, Software and Support	$20m	$16m
Contingency	$7m	$5.5m
TOTAL	$63m	$50m

Note: The overall PAS/ EMR program that SVHA are seeking to embark on includes 16 hospitals across three states. This approach brings economies of scale for all hospitals and provides greater benefits of standardisation and ongoing support across the SVHA network. A contribution to the funding for St Vincent's Public hospitals is being requested in the states of NSW and VIC. SVHA will fund private hospitals in their entirety and co-fund public hospitals in collaboration with state governments.

5. PRELIMINARY COST BENEFIT ANALYSIS

5.1 Preliminary Cost Benefit Analysis (PCBA) Excel Template

The 2022 Preliminary Cost Benefit Analysis (PCBA) template (Attachment 2) must be completed for each investment proposal submitted. This will ensure that all proposals provide net benefits to the NSW community.

In order to calculate the benefits, the following may be required:
- o Information on the changes in anticipated activity with the Proposal (e.g.- Total Separations by Service Related Group (SRG) compared with a base year)
- o Proposal Capital cost information – Best Estimated Total Costs (ETCs) distributed over time based on Health Infrastructure cost planning advice
- o Estimates of base case and project case operating costs
- o Information on the number of staff impacted by the proposal or workforce requirements
- o Anticipated/estimated travel time savings for patients due to facilities being placed in local communities

The PCBA User Guide, Framework and FAQs (Attachment 3) provides instructions to assist Health entities in completing the PCBA input template.

For further assistance with the PCBA template, please contact:

Strategic Analysis and Investment Unit
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