NSW GOVERNMENT | Health Infrastructure

HOW TO BUILD A HOSPITAL

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HOW TO BUILD A HOSPITAL

Health Infrastructure is the capital works arm of NSW Health and oversees the planning, design, procurement and construction of health facility investments valued at $10 million and above.

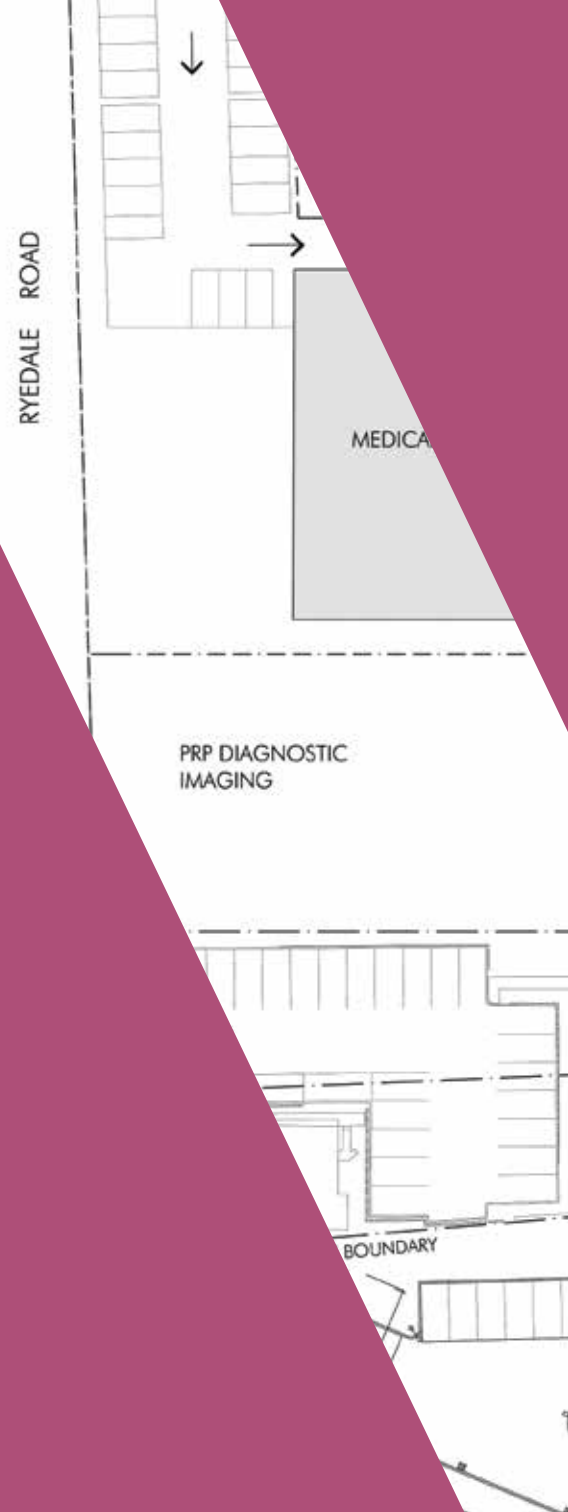
To get the best clinical outcomes, Health Infrastructure facilitates Project User Groups. These groups are critical and are made up of clinicians and other staff, patients, carers, as well as members of the community. Engaging with all types of users provides valuable and ongoing insight at every step of the process, so that the best patient outcomes can be achieved.

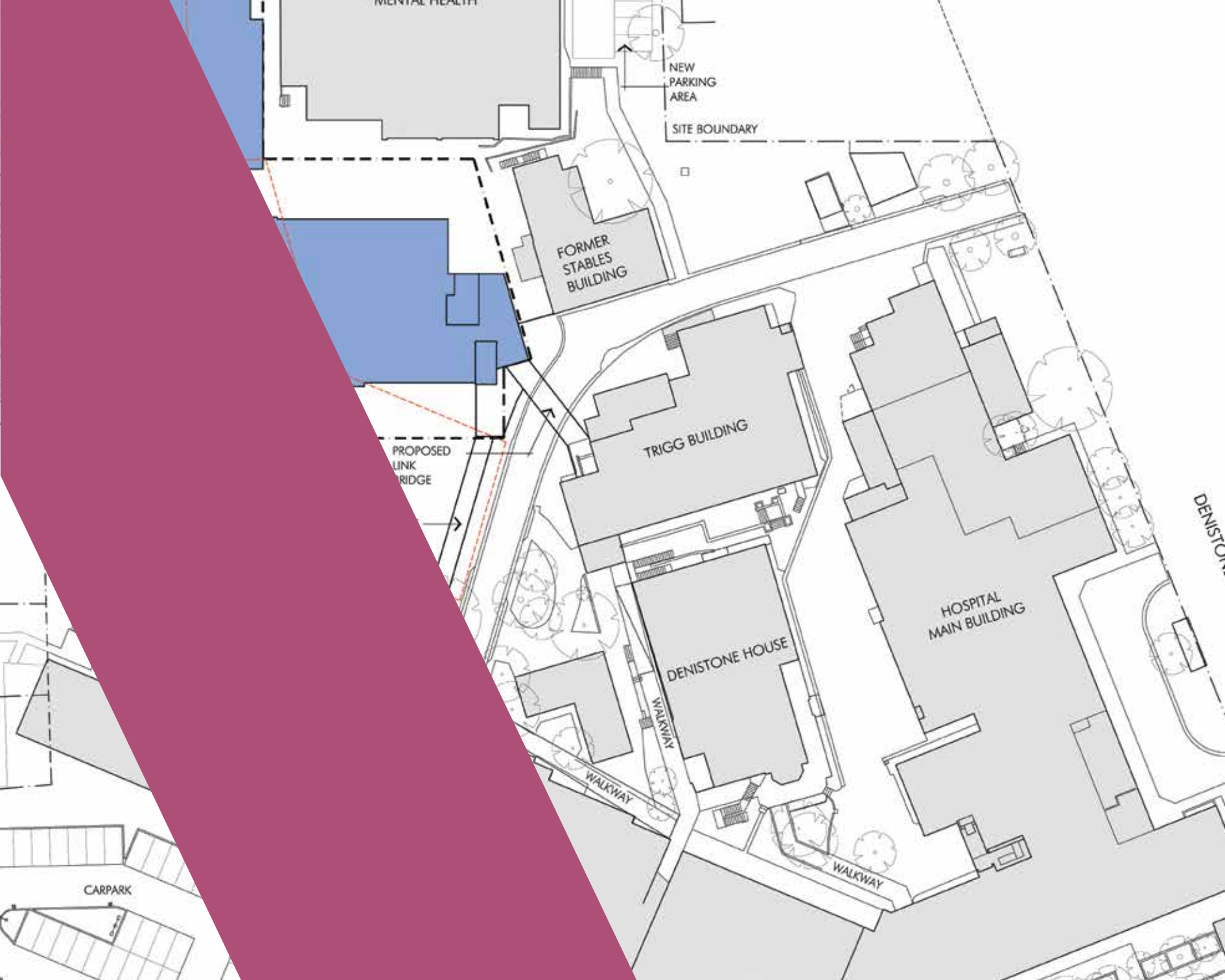
Health Infrastructure contracts private sector professional services providers and construction contractors to implement all projects and is accountable for extensive stakeholder engagement in order to facilitate these projects.

The NSW Government's $5 billion health capital works program delivers a contemporary network of hospitals and health facilities across the State.


RNS Community Health Centre

PLANNING PHASE




NEW
PARKING
AREA
SITE BOUNDARY
FORMER
STABLES
BUILDING
TRIGG BUILDING
HOSPITAL
MAIN BUILDING
DENISTONE HOUSE
WALKWAY
WALKWAY
WALKWAY
CARPARK

CLINICAL SERVICES PLAN

The first critical stage in the development of new hospitals and health facilities is clinical services planning.

During this stage, the Local Health District (LHD) creates a plan to meet the health services needs of their local community, and also considers their other clinical networks, and relationships with nearby hospital and health facilities.

As a clinical services plan is developed, health planners then assess how the health care needs of the community can be serviced into the future, taking into account forecasts of the changing needs of the population.

Health Infrastructure is involved in the clinical services planning process, and begins to assess, in conjunction with the LHD and user groups, what types of solutions may be applied to meet the current and future health care needs.

The clinical service plan allows Health Infrastructure and the LHD to ensure the clinical care for people is made available at the right time and in the right location, within the allocated investment.

The clinical service plan also outlines contemporary and future models of care and are the road map for a clinical change program accompanying the build process.

A typical clinical services plan looks at least 10 years into the future using current health data and data projections of future needs, such as population growth and a changing age profile.

MASTER PLANNING

Once a robust clinical services plan has been developed, the next steps involve master planning, and formal development and consideration of a variety of solutions that meet the clinical requirements. Master planning provides the framework that helps define and identify future opportunities for a development.

The key purpose of master planning is to develop a map showing how key clinical connections and requirements can be supported with different types of infrastructure, and how this infrastructure can be located and connected to existing and new health networks, as well as supporting infrastructure such as transport and utilities.

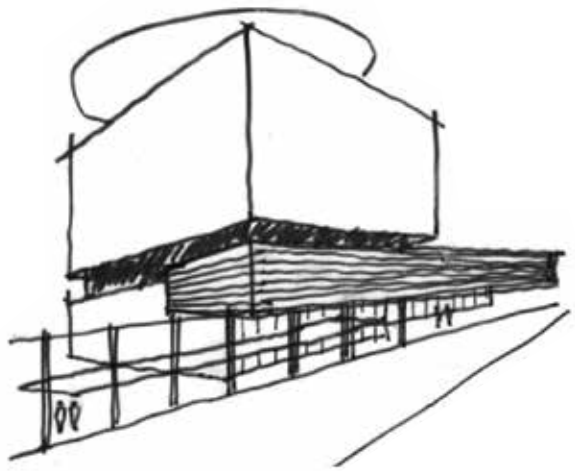
The master planning process often involves the development of a campus plan identifying the location of key elements of a hospital, including clinical or acute services buildings, structures housing specialist care units, and ancillary or support services.

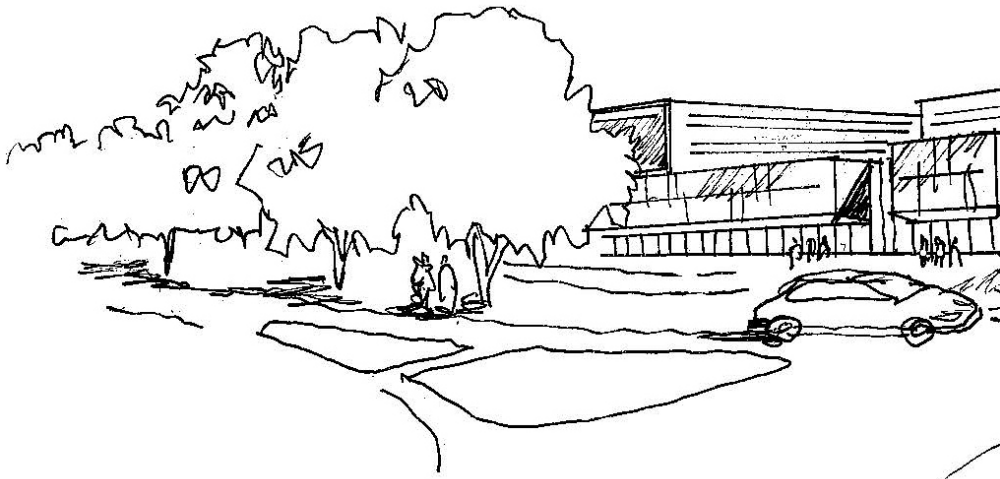
Master plans also address how people will get to and from the hospital, what associated facilities and development will add to the health care facilities, and how the hospital works as a place.

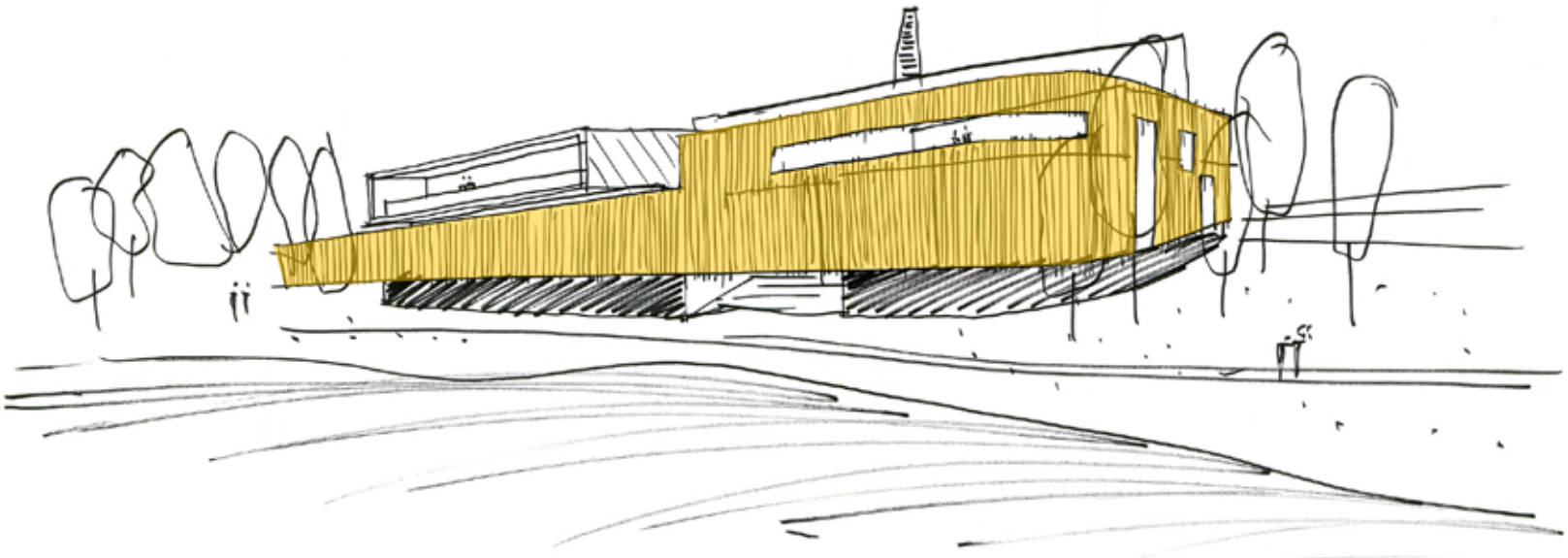
Master plans are typically prepared in consultation with local government and government planning agencies, as well as clinicians, staff and local communities. This means key stakeholders have opportunities to contribute to both clinical and site planning from the very start of major projects.

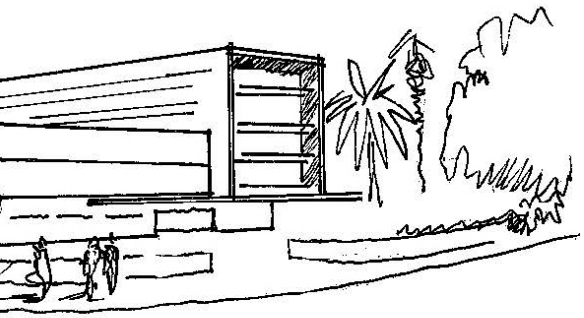
In some locations, the master plan will be a key driver of the economic development of a broader part of that location, and in Sydney, may be part of the Greater Sydney Commission's District plan.


BLACKTOWN
HOSPITAL
Parking P
Drop Off /
Pick Up
Main Entrance
Emergency









FUNCTIONAL BRIEF

The next stage of planning, the functional brief, outlines the types of services that will be included and the scale of the project, as well as supporting services.

The functional brief uses the clinical services plan to provide scope (e.g. number of inpatient beds to be provided in a future hospital), and applies the next level of detail to the project.

The functional brief can be seen as the first definition of the new buildings as it describes the full range of services to be provided, how they will operate and the functional and design requirements.

Health Infrastructure continues to develop the functional brief in consultation with key stakeholders, to facilitate an outcome whereby the project scope can inform the design phase.

Participation from user groups is important during development of the functional brief, as clinicians and other staff including nurses and hospital managers, as well as patients and community representatives, are able to provide input into the infrastructure and services.

BUSINESS CASE DEVELOPMENT

Concurrently with planning for the physical infrastructure, Health Infrastructure works with hospitals and LHD teams to develop business cases for health capital works projects.

The development of a robust business case is a NSW Government requirement for all large scale capital projects, to ensure infrastructure agencies deliver projects that drive value for money outcomes for the community.

Health Infrastructure, agencies and key stakeholders, will typically develop a preliminary business case in the first instance.

Once key elements of the final business case are endorsed by LHDs, hospital management, senior clinicians and user group representatives, the final business case will be submitted to the NSW Government for consideration.

Project business cases, including a benefit-cost analysis, are then factored into the Government's State Budget planning cycle and are prioritised for funding allocation.

Health Infrastructure will consult with partners including clinicians and LHD executive teams to ensure a final business case incorporates a scope of infrastructure and services that meet the clinical needs of patients and local communities.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DESIGN PHASE

CONCEPT DESIGN

The first step of the design phase is the development of a concept design allowing for the hospital plan to be brought to life.

The concept design is a 'high-level' design which shows the relationships between the clinical functions, services, buildings and other facilities both horizontally and vertically.

During this phase, Health Infrastructure works with the LHD to ensure the proposed location of future and existing clinical functions will complement the way the hospital will be managed.

In the concept design phase, Health Infrastructure and the LHD will continue to consult further with user groups and key stakeholders.

Consultation during this phase is vital in ensuring a project's design is heading in the right direction, providing a means for adjustments to be made to ensure quality and valued outcomes are delivered that meet stakeholder and user needs.

The concept design diagram is sometimes referred to as 'blocking and stacking', as it provides stakeholders with an indicative image of size and scale.

SCHEMATIC DESIGN

Once the concept design has been agreed and finalised, the next step is the schematic design.

The schematic design is 'department focused' and includes plans for how rooms and services will relate to each other within a defined service such as an intensive care unit.

Designers take into account the 'flow' through the hospital of patients and staff. They also incorporate the next level of detail, including logistics around delivery of consumables, collection and disposal of waste, and interconnection with services such as electricity, water and telecommunications.

During the schematic design phase, Health Infrastructure works with hospital management teams and staff, and patient representatives, taking on board feedback to ensure a newly built hospital will operate efficiently while providing high quality care.

Health Infrastructure also applies organisational intellectual property in how to build a hospital.

The schematic design considers the building and services to the next level of detail, providing clinicians, staff, and other stakeholders with a greater level of understanding of what the new hospital will look like, and how it will work.


DUBBO HOSPITAL

DETAILED DESIGN

After the schematic design has been completed and signed off by key stakeholders, including senior clinicians at the hospital, the project moves into the detailed design phase.

As an example of the level of detail taken into account in this phase, a data sheet will be made up for each and every room in the hospital, including specifications for the layout of furniture, fittings and equipment.

The detailed design goes into specific room and ward layouts. It also includes the development of the final façade of the building, and complete list of technology, fixtures, furnishings and equipment.

DELIVERY PHASE

PROCUREMENT

Procurement processes are designed to engage with the most capable range of contractors to facilitate certainty of delivery.

Health Infrastructure's delivery partners include some of Australia's largest construction firms. This provides the benefit of scale and enables Health Infrastructure to leverage significant industry experience.

For significantly scaled projects, Health Infrastructure uses a standardised Government Contract, referred to as a GC21, which means firms bidding for projects have a great deal of pre-existing information at their disposal. This allows them to tender for projects in a timely and cost effective way, tailoring bids to meet the unique needs of patient focused infrastructure.

Tenders are evaluated on all of their merits, with Health Infrastructure taking into account the proven skills and capabilities of construction firms to ensure the right infrastructure is safely constructed, to meet the needs of communities, within project timeframes and budgets.

Health Infrastructure is also particularly interested in ensuring construction firms are engaging high levels of apprentices as part of their work, and are very proud of their record in delivering on Indigenous employment targets.

Health Infrastructure operates a procurement approach on the basis that projects are delivered efficiently and represent value for money, to the benefit of the community, government, and project participants.

CONSTRUCTION

Construction often involves enabling works, early works and the main building works.

Enabling works are often required to upgrade electricity, water, road or other utility networks to support the increased scale of the new health care infrastructure.

Early works often involve demolishing, clearing and preparing a site for the start of main works. The type of early works undertaken depends on the type of site and project.

Health Infrastructure innovatively manages the interface between enabling, early and main works. In many cases, planning approvals are received for site preparation works, allowing these works to take place at an early stage, while Health Infrastructure awaits approval to commence main works construction.

Additionally, Health Infrastructure will contract with different specialist contractors to undertake different parts of the works to ensure best value for money.

Health infrastructure is also particularly concerned in working with the construction firm to deliver the project in the safest possible manner. This and other innovations in engaging with the market allow for projects to be delivered on time and under budget.

Health Infrastructure continues to work with the LHD and hospital throughout this phase as many projects take place on existing hospital sites. It is essential in cases such as this that the building works do not compromise the day to day work of staff and clinicians in providing patient care.

COMPLETION & COMMISSIONING

Throughout the construction process Health Infrastructure project managers are responsible for the management of the overall project and making sure the buildings are being built to specifications and are fit for purpose.

Health Infrastructure also oversees projects to ensure key construction milestones are being met according to schedule, that the appropriate quality control and safety management is in place, and that Aboriginal participation and apprenticeship opportunities are created.

On conclusion of a project, key milestones will be celebrated such as handover of facilities back to the LHD, official opening ceremonies and the admission of first patients.

After main works construction has been completed, and before patients are admitted, there is a commissioning and testing period, to ensure the new facilities are ready to start delivering the highest quality level of care.

Commissioning is the process of assuring that all components and systems of the project are installed, tested, operated and maintained to the requirements.

The start of main works on major projects is often marked by an official ‘sod turn’ and ‘smoking ceremony’ by the local Aboriginal Elders. When the building reaches its highest point, a ‘topping out ceremony’ will be held.

POST OCCUPANCY EVALUATION

The final role Health Infrastructure plays in the life cycle of a new hospital, is in the post occupancy evaluation phase.

Post occupancy evaluations are conducted on selected projects. This is a robust and structured process which broadly assesses whether the facility solution is meeting the identified service needs of the patients, LHD and staff.

This step assesses the functionality of the facility and how this compares with the key design requirements, building standards and guidelines, as well as procurement processes and outcomes.

Post occupancy evaluations provide critical information on project outcomes, which are then fed back into the processes and planning phases of new hospital projects.

Post occupancy evaluation ensures that Health Infrastructure takes learnings and improvement opportunities, and examples of best practice, into account in planning, designing and implementing of subsequent projects.


EMERGENCY

FURTHER INFORMATION

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to watch a short animation
hinfra.health.nsw.gov.au

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