

Shoalhaven Hospital

Master Plan Report

August, 2021

For: NSW Health Infrastructure

**Conrad
Gargett**



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1.0 Executive Summary

Shoalhaven District Memorial Hospital (SDMH) is a major regional hospital within the Illawarra Shoalhaven Local Health District (ISLHD). It provides a comprehensive range of health services to the Shoalhaven population, networked with higher level services at Wollongong Hospital.

Conrad Gargett in conjunction with Project Managers Johnstaff were commissioned by Health Infrastructure to undertake a Master Plan study to expand Shoalhaven Hospital as it has been identified that a range of services are operating at capacity. Modelling shows that substantial increases in these services are required to meet demand for growth over the next ten years. SDMH's existing site is densely developed and expansion of the facility at the site will require the acquisition of the adjacent Nowra Park.

The Master Plan for SDMH was developed in response to site constraints to accommodate the delivery of clinical services. It makes use of available land and is adjacent to existing hospital infrastructure. This enables continuity of clinical service delivery with ongoing infrastructure projects on the site, which are able to reference proposed functional capacities and clinical adjacencies. This Master Plan concentrates clinical development at the centre of the site, which enables the creation of open space at the southern end of the site.



2.0 Terms of Reference

2.1 Project Team



2.2 Methodology

The master planning process develops a framework to establish the appropriate use of land and accommodation in terms of functional suitability and ability to support the delivery of services. This ensures that future infrastructure projects are able to reference proposed functional capacities and clinical adjacencies as well as identifying underlying constraints and site specific issues.

It is important that the opportunities of the site are realised while satisfying the ISLHD requirements in the short, medium and long term. The recommendation of a preferred solution provides a strategic direction for the future of the Campus.



2.3 Project Objectives

The purpose of the Master Plan Report is to provide a vision for the site and to ensure each stage of development is aligned with that vision. The Master Plan will be informed by the projections to 2031. The following project objectives have been established:

- Provide the infrastructure to meet the growing health care needs of the population in the Shoalhaven LGA and surrounds
- Provide equitable access to services for the residents of the Shoalhaven LGA and surrounds by increasing the self-sufficiency of the hospital
- Support contemporary models of care, in particular, non-admitted and day only episodes of care and virtual modalities
- Provide maximum possible digital hospital scope to enable ISLHD to capitalise on current and future opportunities
- Improve efficiency to staff and patient flows by providing a zonal approach to clinical services with improved functional adjacencies
- Design and build a facility that maximises ongoing resource efficiency and enables ISLHD to reduce its carbon footprint
- Provide culturally appropriate facilities to meet the needs of the First Nations people.



2.4 User Engagement

Master Plan options including capacity for future expansion have been presented at several Master Planning meetings and workshops. This includes presenting to a workshop including various ISLHD staff, stakeholders and consumers, an Executive User Group and through project governance.

Feedback from the various groups including the Hospital consumer and Aboriginal advisory committees have been incorporated where relevant into the preferred options to provide the optimal 'long term' outcome for the Shoalhaven Hospital and community.

The preferred option was selected based on an evaluation at the various Master Planning workshops and endorsed through the project governance structure.

Concurrently the Master Plan and the overall project strategy and commitment to Country and ESD aspirations were presented to the Government Architects at the NSW State Design Review Panel with informative feedback. This included the importance of maintaining engagement with the local indigenous communities and continuing to explore the relationship between the building forms and the surrounding landscape.



3.0 Clinical Services Vision for the Redevelopment

The Illawarra Shoalhaven Local Health District has a vision for Shoalhaven Hospital to be the health hub for the Shoalhaven area, providing the majority of emergency, critical care, acute, subacute and non-admitted services locally, reducing the need to transfer patients to Wollongong and Sydney. Shoalhaven Hospital will continue to be networked with Wollongong and the New Shellharbour Hospital as part of a District-wide network.

Acute Services Scope

Acute Medical Services

Expanded medical wards will provide a comprehensive service for a broad range of medical specialities including gastroenterology, respiratory, oncology, endocrinology and general medicine. A dedicated acute stroke unit which will be expanded to meet the growing need. Renal Dialysis will be redesigned to meet contemporary design standards.

Cardiology

A new dedicated cardiology inpatient ward and Coronary Care Unit will be established, collocated with new Cardiac Diagnostic Centre and Cardiac Catheterisation Laboratory. Additional cardiology outpatient clinics will provide follow-up appointments and early intervention to help reduce reliance on hospital beds. Cardiac rehabilitation and heart failure services will operate onsite.

Aged Care

A comprehensive aged care service will be provided through a new dedicated acute aged care ward, supported by a subacute geriatric evaluation and management ward. Outpatient clinics will be expanded to provide greater access to outpatient medical, nursing and allied health services.

Surgical Services

Surgical services will be significantly expanded in the redevelopment. We are doubling the number of theatres, and doubling our endoscopy procedure rooms. Two new overnight surgical wards and a dedicated day surgery ward are all part of the enhanced surgical service. The inpatient service will be supported by dedicated pre-admission clinics, orthopaedic and fracture clinics and rehabilitation services to improve patient outcomes and flow.

Mental Health

A full range of mental health services will be part of the redeveloped Shoalhaven Hospital. A new acute and non-acute mental health ward will be specifically designed to provide the right environment to support recovery-focused models for our mental health consumers.

Maternity, Birthing and Paediatric Service

Maternity and Paediatrics will be provided in dedicated precincts that comprise acute admitted care collocated with short stay units, and non-admitted clinics. A Midwifery Group Practice model and a new maternity Day Assessment Unit will be provided in the redeveloped hospital. A new Paediatric Assessment unit will provide a short stay model for patient not requiring overnight admissions.



Critical Care

Emergency Department

The new emergency department will double in capacity. Contemporary designs and models aimed at improving patient and carer experience are all part of the redevelopment. In addition to our acute medical bays, an emergency short stay unit will be provided to improve patient flow and reduce our wait times.

Intensive Care

A new intensive care unit will provide a contemporary state-of-the-art designed ward that will double the hospital's ability to provide the required support for its new and expanded services.

Subacute Care

Rehabilitation

Specialist rehabilitation for a range of conditions (including stroke, orthopaedics, brain and spine injury, and general rehab) will be provided. There will be new therapy and activity areas accessed by all inpatient wards. A dedicated day rehabilitation unit and outpatient clinics will be enhanced, which will provide expanded outpatient rehabilitation.

Palliative Care

Specialist palliative care services for inpatients and outpatients will be located on the hospital site, and will be provided in a dedicated palliative care ward. The palliative care service will continue to offer home based care and outpatient care.

Support Services

Support services will be enhanced to match the expanded and upgraded hospital profile, and will include: expanded imaging modalities which will include MRI, nuclear medicine and interventional radiology, new expanded pharmacy departments and expanded pathology services.

Outpatient Care

The Hospital redevelopment will include an expanded outpatient services for medical, nursing and allied health services. A number of areas will be specially designed to meet the needs of services such as cardiac rehab, diabetes, maternity and paediatrics. A new medical ambulatory care unit will be provided allowing infusions to be administered in outpatients capacity. The area will accommodate a wide range of clinics, group activities, education sessions and telehealth services.

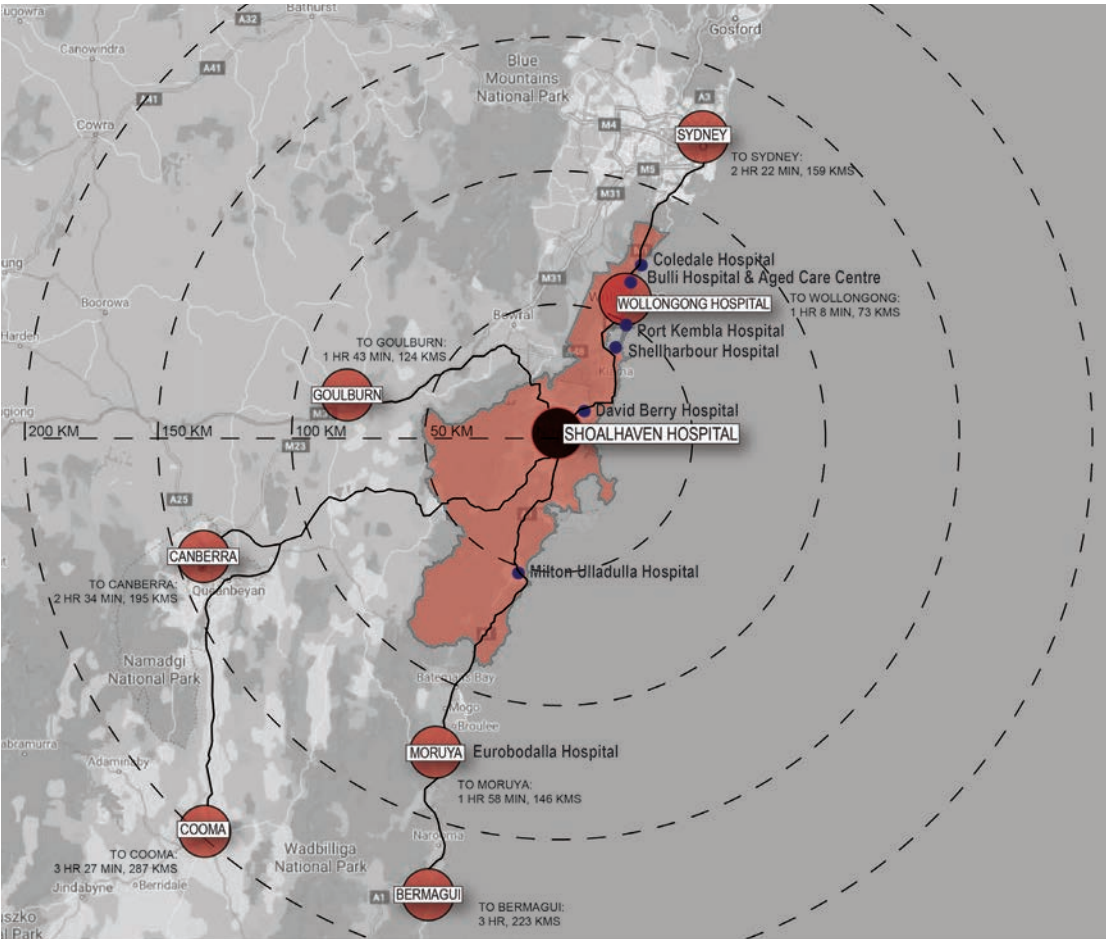


4.0 The Site

4.1 Location

The existing Shoalhaven Hospital is located within walking distance of the Nowra town centre. Shoalhaven Street forms the eastern boundary and Scenic Drive which overlooks the Shoalhaven River forms the north and western boundaries. North Street is to the south of the hospital. The Cancer Care Centre and a GP Clinic has been recently developed on the south western part of the site. A community pre-school is located on the eastern side fronting Shoalhaven Street.

Surrounding streets are zoned for mixed use and residential. They are currently residential in character including some buildings repurposed for healthcare use.



Site Analysis - Locality Plan 200 km

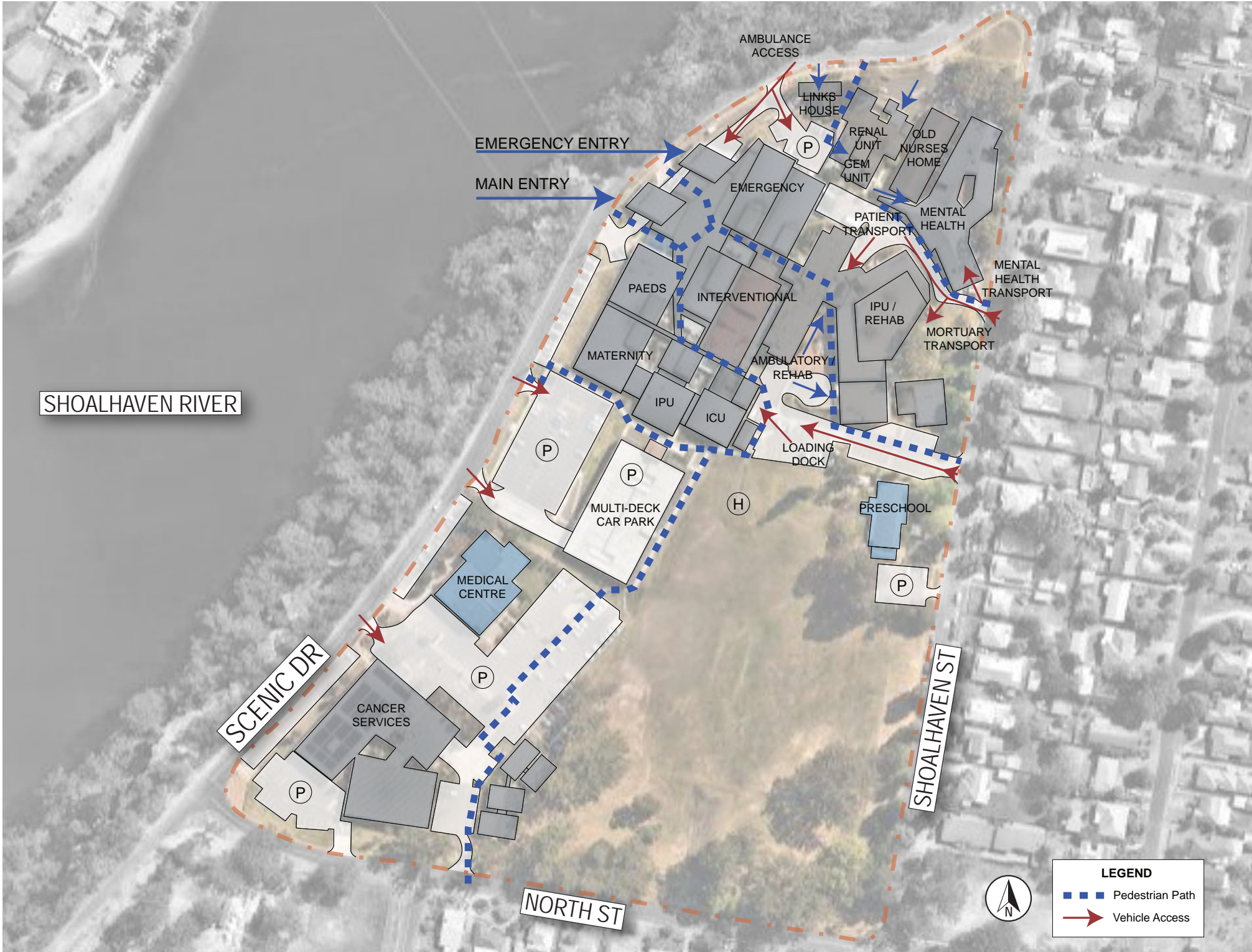


Drone Panoramic Photo



Site Analysis - Nowra Region

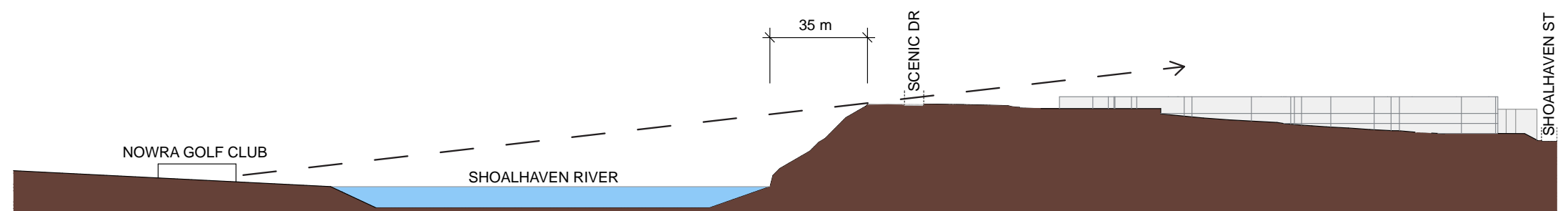
4.2 Current Site Plan



4.3 Site Survey / Topography

There is a two to three storey change in level across the existing hospital site from east to west. The highest point of the site is at the south west corner with an RL of 35 and the Scenic Road entry to Building B is at RL 26. Shoalhaven Street on the east side rises from RL 16 to RL 19 travelling north to south. Entrances off Shoalhaven Street currently require walking up steep gradients. Visitors can enter and exit the hospital at three different levels resulting in challenging way-finding.

The site's elevated location adjoining the Shoalhaven River results in exposure to prevailing winds from the west.



4.4 Environment

While the Hospital is located near generous areas of green space such as Nowra Showground and planting along the Shoalhaven River, most landscape within the hospital site itself functions as a buffer. Exceptions include the courtyard outside Block A, children's play area at the Paediatric IPU and small courtyards within Block B.



1. Courtyard into existing hospital



2. Nowra Park



3. Landmark tree & playground area



4. Corner of North & Shoalhaven Street



5. Nowra Riverfront & Paringa Park



6. End of Scenic Drive circuit in Paringa Park



7. Riverside cliffs edge



8. Ben's Walk



9. Nowra Showground



10. Hanging Rock Lookout



11. Hanging Rock Lookout near stair access to Ben's Walk



12. Block B Courtyard

There is a very old and large blackbutt tree (*Eucalyptus pilularis*) located towards the southeast corner of Nowra Park. Standing at 25m high with a broad canopy of almost 20m in radius, this landmark tree holds great cultural significance to both the hospital and the greater community of Nowra. Examination of the lower stem shows that there are wounds on this tree that may indicate it is an Aboriginal scar tree. Steps have been undertaken to ensure that the tree is incorporated within both architectural and the landscaping strategies.

- Options have been developed to provide considerable space around the tree, to allow for potential communal gathering space.
- “Germinations” are planned to be made from the tree so that saplings can be included to the landscape plan. The future size of these needs to be considered in the landscape plan. As suggested it is proposed to incorporate further native trees around the blackbutt tree. Protection of the tree is an important consideration for the preferred Hospital design option.



4.5 Sun and Wind Orientation

The climate at Shoalhaven Hospital is sub-tropical with warm, humid summers and mild winters. During the summer the prevailing winds shift between the east and south east directions while in winter the prevailing winds come mostly from the west. The site's elevated location adjoining the Shoalhaven River increases the exposure to the westerly winds and wind speeds are slightly higher in the winter.

The sun path diagram shows the path of the summer and winter sun. Average temperatures show that the climate is generally temperate. Summer averages range from 25°C - 18°C. Winter averages range from 16°C - 8°C.



4.6 Biodiversity, Flood, Bushfire, Groundwater & Mine Subsidence

Biodiversity

A review of the NSW Government Biodiversity Values Map and Threshold Tool portal shows the site to be unaffected by any mapped biodiversity – see *Figure 1*. Notwithstanding, a SSD DA will require the preparation of a Biodiversity Development Assessment Report (BDAR), unless otherwise waived by the Department of Planning, Industry and Environment. In that instance a BDAR Waiver request would need to be made.

The site (and its general environs) are also excluded from the LEP's Terrestrial Biodiversity Map.

Flood

The hospital site is not mapped by Shoalhaven LEP 2014 as being subject to flood planning controls – see *Figure 2*.

Bushfire

The western fringes of the site are subject to bushfire affectation – see *Figure 3*. This shows the Scenic Drive frontage to be subject to Vegetation Buffer and Vegetation Category 2 impacts. Specific bushfire advice required regarding Special Fire Protection Purpose.

Groundwater

The site is not mapped as being subject to groundwater vulnerability under the ePlanning Spatial Viewer.

Mine Subsidence

The site is not mapped as being subject to mine subsidence or within a Mine Subsidence District under the ePlanning Spatial Viewer.

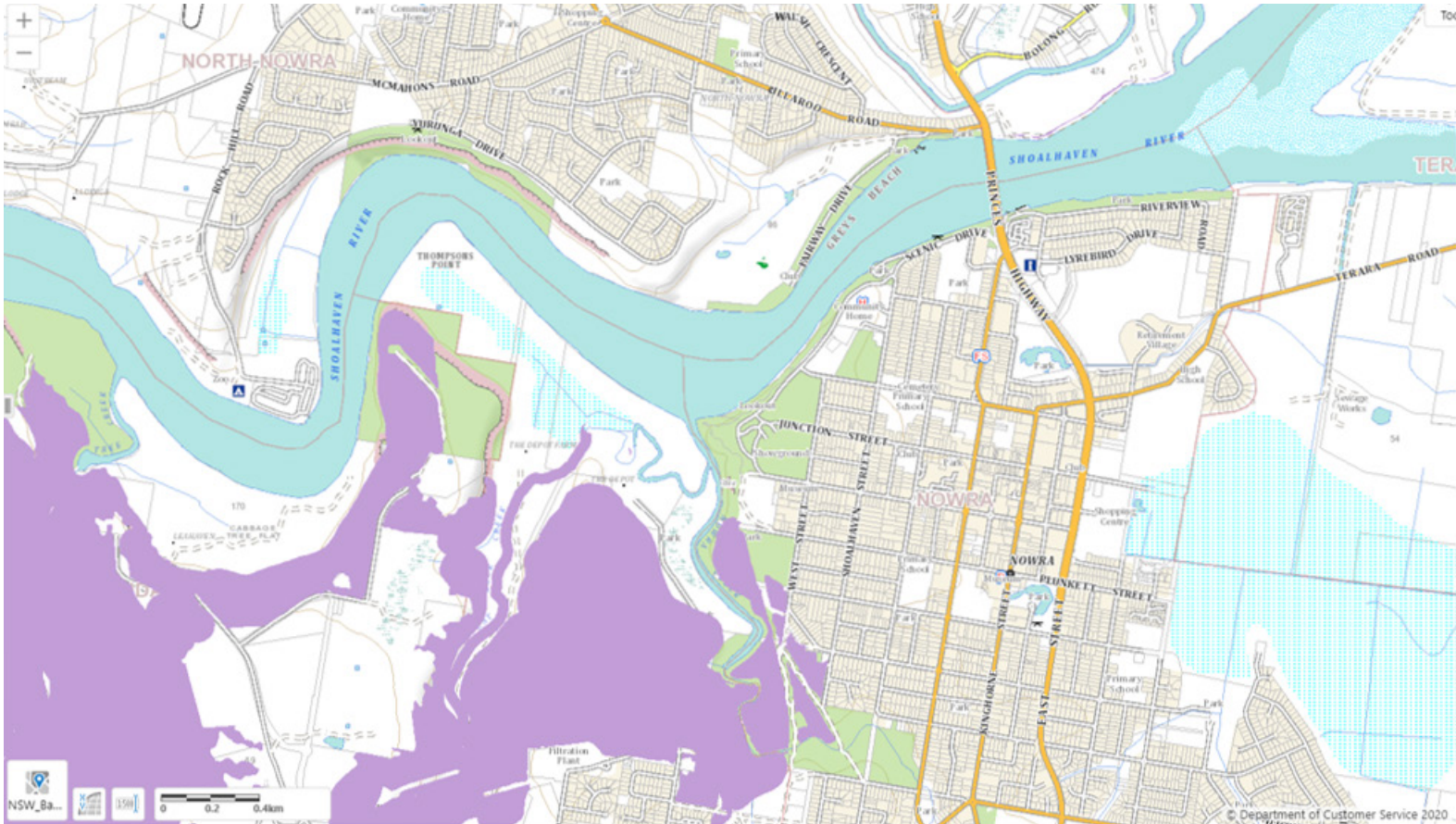


Figure 1 - Shoalhaven LEP Terrestrial Biodiversity Map

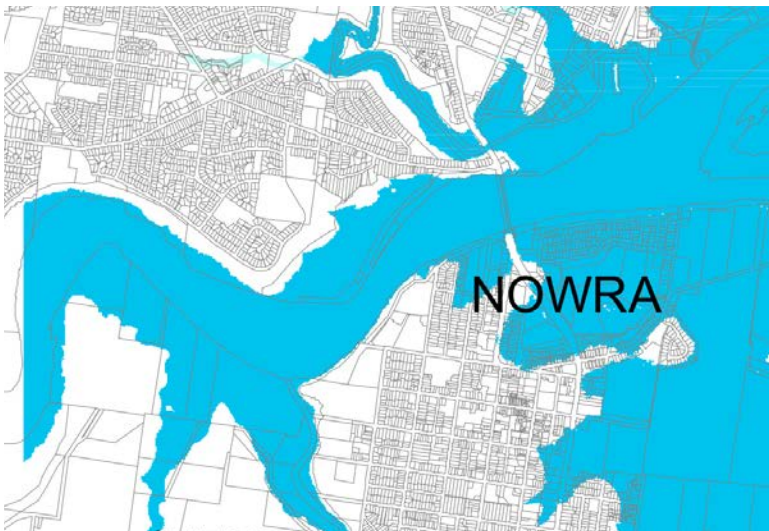


Figure 2 - Shoalhaven LEP Flood Planning Control Map

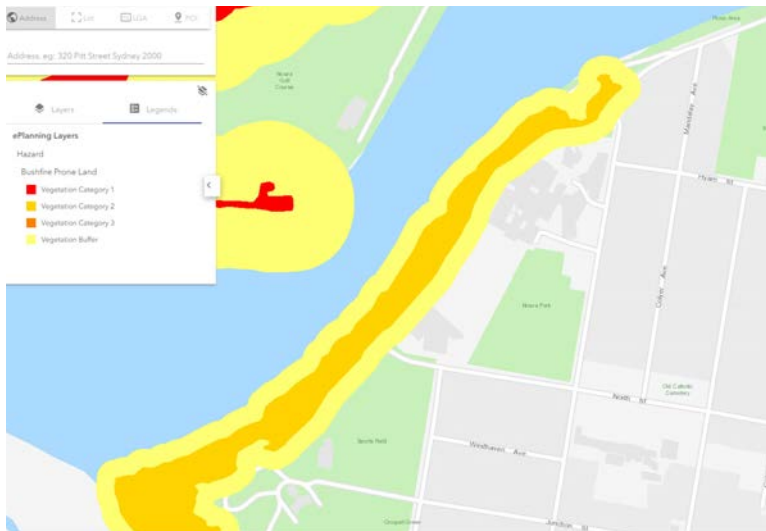


Figure 3 - Shoalhaven Bushfire prone land map

5.0 Functional Relationships and Assessments

The existing core services at Shoalhaven Hospital work well to deliver the needs of the region although a rapidly increasing population and growth in tourism numbers is putting pressure on the current infrastructure.

The original Main entry at Level 1 has been adopted as a separate outpatient and sub-acute entry to some services. This is located in the centre of the site at a lower level from the main clinical services which is convenient for patient drop-offs but the entry is hidden from the street and the approach is shared with back of house traffic at the loading dock.

Despite their non-central location, Mortuary, Pathology and Pharmacy work relatively well at the ground floor of Building A as they all have their own public access independent of the hospital close to the street. Blood collection also occurs in this location.

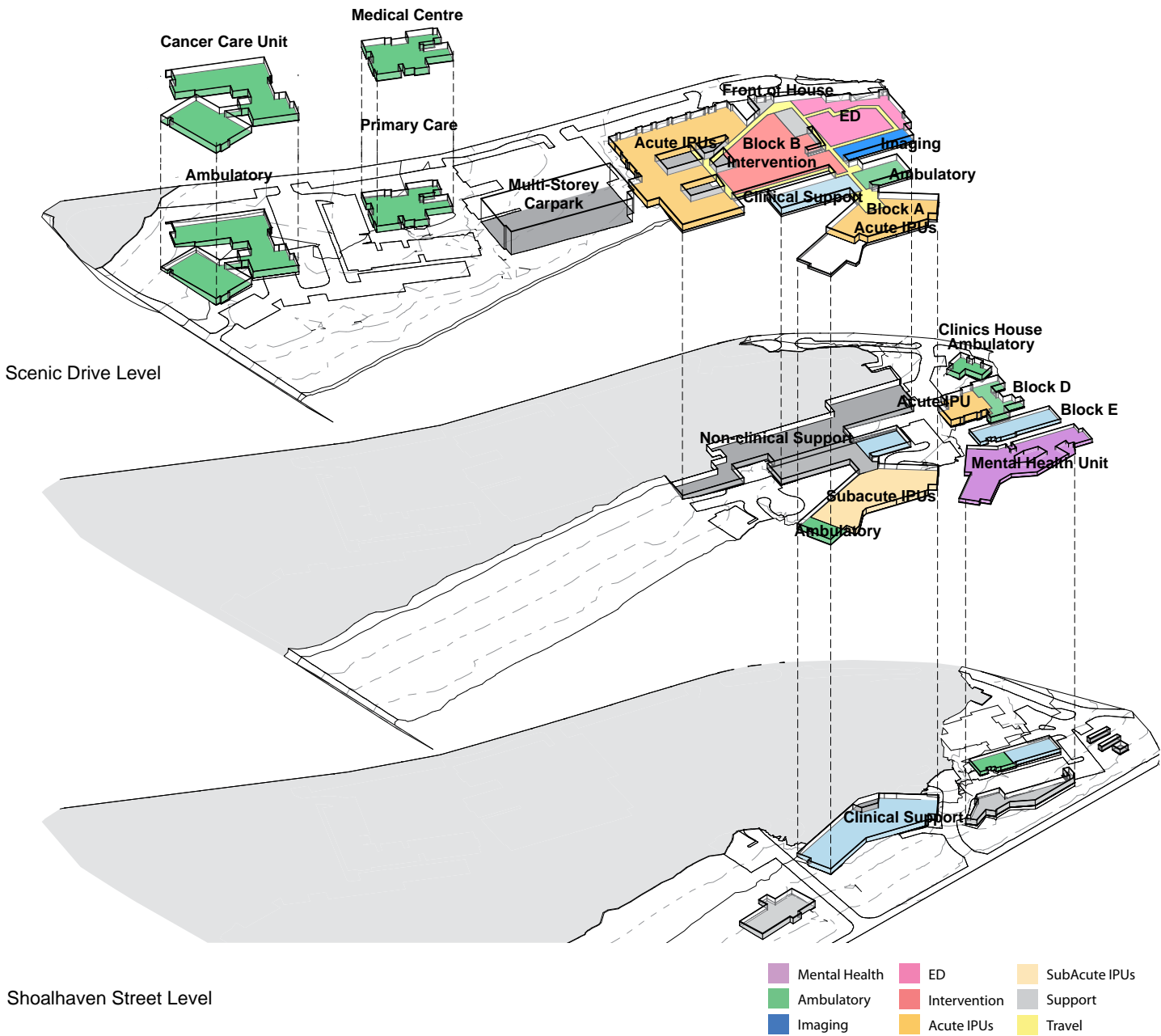
Block E, the sub-acute mental health building, is a relatively recent building and the clinical design appears functional. However, pedestrian access to the sub-acute mental health building particularly from Shoalhaven St is made more challenging by the steep site.

The former nurse’s home building is in poor physical condition with a limited life span containing overnight accommodation and has been adapted into administration areas.

The recently completed multi-storey car park accommodates an increase in car spaces in preparation for the proposed redevelopment. Final assessment of the required spaces will occur throughout the planning phases.

The existing GP Clinic provides private clinical support services that augment the total clinical delivery for the region.

The Cancer Care Centre provides specialist cancer services to the Shoalhaven region, and is an important support service to the hospital.



6.0 Project Master Plan

The preferred Master Plan enables the Shoalhaven Hospital to be developed in line with a precinct vision.

Acute Services

- Located at centre of site with good access to existing clinical services to suit staging strategies
- Good street access
- Adjacent to refurbished zone (Ambulatory, Acute & Non-Acute services) in existing building and multi-storey car park
- Future expansion to the North

Refurb Zone (Ambulatory, Acute and Sub-Acute Services)

- Refurbished development will house Ambulatory, Acute and Sub-Acute services
- Good street access
- Adjacent to Acute Services and multi-storey car park

Complementary Health Functions

- Adjacent to Acute Services and multi-storey car park
- Dedicated access from Scenic Drive

Cancer Services

- Takes into consideration location of existing cancer services

Other options had been considered, whereby the new hospital is located at either the northern or southern half of the site. This required the full clinical scope to be built within the new development, and presented considerable staging, decommissioning and budgetary challenges.



7.0 Master Planning Design Principles

7.1.1 Architectural

Stakeholder engagement and a consultative design process has been undertaken to deliver an optimum design solution for Shoalhaven Hospital. A broad range of stakeholders have been involved to make a creative contribution and deliver significant benefits including: generating ideas with a high degree of user value; improved knowledge of ISLHD’s needs; rapid validation of ideas; and more efficient decision making. Giving stakeholders design options is critical in robust analysis, achieving the best design outcome and ensuring stakeholder support. Comments received from design workshops are addressed and a final recommended option is established. The preferred options will require further development in the next phase of design.

Site information gathering is crucial to understand the existing campus. The site analysis captures topography, existing buildings, environmental issues, potential contamination, infrastructure services, flooding, overland flow, heritage (indigenous and non-indigenous) and acoustic considerations. Feedback from stakeholders also assists to capture pedestrian networks, traffic and logistics networks. The Shoalhaven Hospital site has several distinguishing features that act as design drivers for the project. These include the 2-storey change in level across the site and the expansive views to the east.

The urban structure of the site was also examined and considered in context with the structure of Nowra town centre. An encompassing urban strategy for the site has been developed to provide a robust core for future development to build upon beyond the current project. This has been based on a north-south axis, derived from existing building development that follows the RL 22.0 contour and east-west corridors that cross the fall of the site.

The functional design brief enables the establishment of a footprint which is representative of the project requirements. Benchmarked areas with travel and engineering ratios built in have been referenced to ensure design proposals have inbuilt optimisation prior to the functional briefing being finalised. This contributes to an indicative building envelope and access requirements. The building mass will take advantage of the ability to reuse suitable existing facilities.

A design approach has been developed that leverages urban design and architecture to transform the hospital into a significant community asset that expresses wellness principles. Intuitive way finding is prioritised, providing reference points enabling circulation such as views, materials and functional elements.



Site in Context



Urban Strategy and Permeability



Project Master Plan

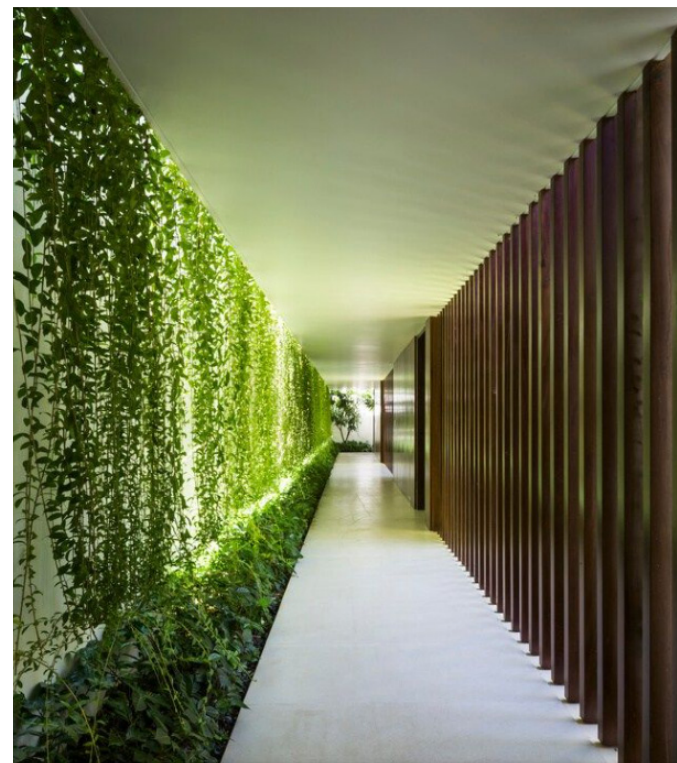


Design Drivers

7.1.2 Interior Design

Interiors spaces, colours, materials and furniture selected for healthcare interiors can support patients, their families, carers and visitors' wellbeing by providing:

- Memorable spaces which assist with wayfinding
- Related but varied 'landmarks' whether by colour, materials, graphics which provide non-institutional public spaces supporting user comfort and overall wellbeing
- Natural, light-filled and life affirming spaces with a strong connection to the surrounding environment
- Integrating elements of the natural world (biophilic design) not only through windows but in material selections, colours and textures
- Spaces that relate to the local context with reference to the Shoalhaven landscape in materials and colours, not alien to public and staff users
- Inclusion of local elements such as artworks, place names, historical and cultural items or references creating a culturally relevant environment
- Integration of current artwork co-ordinated with new concepts and wayfinding.



The colours and materials selected will appropriate for each individual facility and will also consider the following important criteria;

- Providing a healthy, productive, safe and healing environment for staff, patients and their families, with a preference for materials that are sustainable, have low toxicity and low embodied energy
- A healthy environment that provides good lighting, indoor air quality, safety, security and accessibility
- Providing an environment which supports infection control
- Ensuring materials provide the required acoustic comfort
- Providing elements which are low maintenance and ergonomically suitable
- Materials which reduce pvc and have low VOC's
- Do not contribute to slips, falls or any injury issues.

Consideration will be given to the individual needs of each area. Consultation with each user group will inform identity, clinical appropriateness, maintenance, safety and infection control will further inform the selections.

These selections will be required to relate to and support a wide range of users with varying degrees of mobility and conditions. Starting the local landscape as a theme provides an opportunity to successfully put all users at ease by connecting them to the place where they live, giving them a sense of belonging, to spaces that reference local vernacular, history and culture.



7.1.3 Art Strategy

Arts Integration

Playful and interesting artworks, sculptures and installations speak to the stories of our residents, wildlife and environment and offer the artists insights about our region.

Public art can:

- Tell our stories
- Beautify the hospital campus
- Create cultural and educational awareness
- Give artists recognition and profiles their artworks
- Help create community pride whilst assisting in reducing anti-social behaviours such as graffiti and vandalism.

The Shoalhaven Hospital campus provides a good opportunity for incorporating art into the current landscape and new hospital interiors considering the Hospital's existing collection.



The inclusion of any new artwork will need to identify opportunities for works and develop a clear brief. An exploration of the opportunities the site presents can be explored through the design process and can include elements such as:

- Indigenous dreaming garden with healing plants
- Feature or memorial gardens
- Elements in hard paving, seating in landscape or shade/play structures
- Landmark elements which assist with wayfinding & provide an environmental, social or cultural history of the site that can educate and inform visitors in addition to functioning as a wayfinding landmark
- Identifying any significant cultural history
- Identifying opportunities for locating current, new and future art internally as part of wayfinding
- Performing an audit of the existing collection and identifying which can and cannot be used as landmarks will enable facilities to make use of their existing resources
- Consider areas for changing local community exhibitions including artists, photographers and identifying potential for future works.



Aboriginal people from the Shoalhaven have a long tradition of marking the landscape. Hand stencils line the walls of a cave along the Shoalhaven River, and the trunks of trees were once patterned with carvings. Marks of identity are also found on shields.

Scarred trees occur across southern and eastern Australia, including much of NSW. They are a form of Aboriginal visual communication and mark sites of significance as initiation or burial sites. The tradition of marking the landscape with carvings and stencils could be explored in consultation with the local Aboriginal community and offer opportunities for:

- the inclusion and commissioning of works which bring awareness of Aboriginal culture
- the inclusion of appropriate spaces or facilities for cultural proceedings that the community requires.



In consultation with the Aboriginal community and the Hospital, the design can look at where elements could be combined with the landscape, interiors and wayfinding to create an opportunity for outside interaction with the knowledge shared. Many people (Aboriginal and non) do not have access to the world of Aboriginal culture and knowledge and often have a thirst for learning more.



7.1.4 Sustainability

Shoalhaven Hospital Redevelopment Masterplan Sustainability strategy

Introduction

The redevelopment proposal for Shoalhaven Hospital presents an excellent opportunity to deliver a sustainable and resilient hospital, which has the environment, local community, staff and patients in the centre of the design. The proposed masterplan is on the existing Shoalhaven Hospital site, and aims to connect to its surroundings i.e. the existing hospital buildings, the park to the south and existing community to the east. The sustainability strategy for the project reflects the high aspirations and commitments for this project.

Sustainability brief

DCN058 includes the requirement to meet a level of sustainability expected from a development equivalent to a 4 Star Green Star rating. The project is currently exploring the possibility of exceeding this as well as meeting the Local (Illawarra Shoalhaven) Health District’s sustainability aspirations.

In addition to this, the project will comply with Health Infrastructure’s broader sustainability framework.

Finally, the building will also be required to meet minimum regulatory compliance requirements, i.e. National Construction Code, and relevant planning controls.

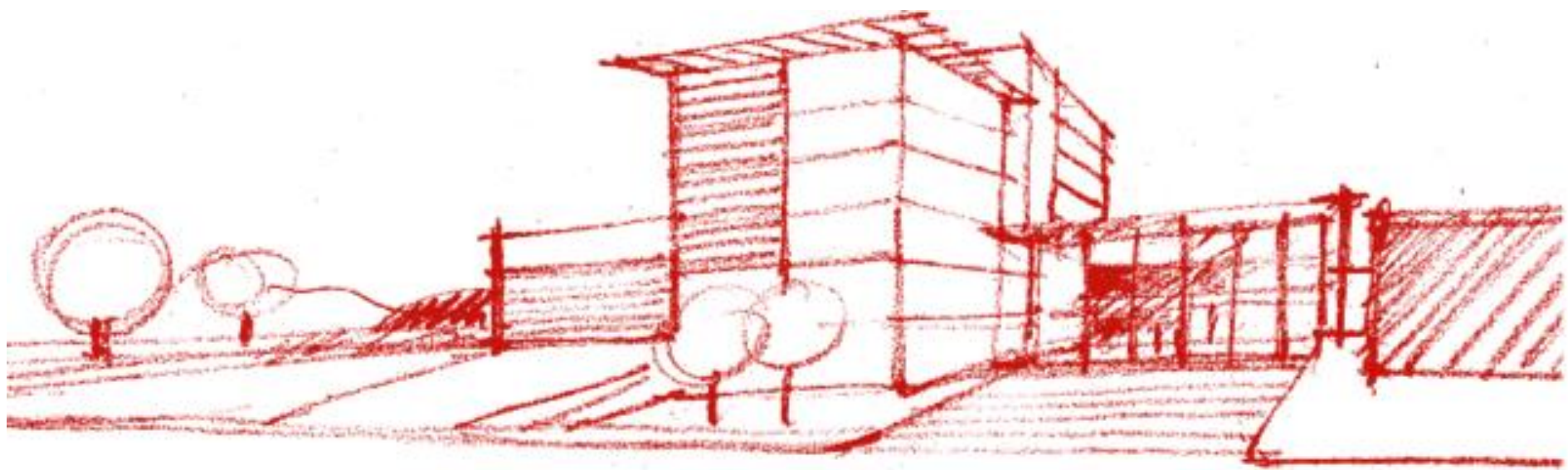
All these sustainability aspirations and requirements are detailed below and have informed the sustainability strategy for this project. The overarching sustainability strategy is being led by HI’s sustainability consultant. The initiatives presented here is the architect’s input into the strategy.

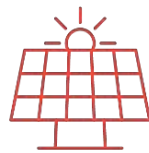
Illawarra Shoalhaven Local Health District

In the *Shoalhaven Hospital Redevelopment, Project Visions and Aspirations, Good Design and Ecologically Sustainable Development (ESD) Drivers*, the LHD provides a suite of Project Good Design and ESD Drivers and asks the project team to identify the ones appropriate for this project and then develop and implement these further with the consultant teams.

These are grouped in seven Project Aspirations as identified in the document:

- **Better fit:** e.g. the project should relates to its local context, integrating indigenous values and local topography
- **Better performance:** e.g. low energy, highly durable and adaptable building
- **Better for community:** e.g. allowing internal connectedness and support accessibility and social interaction, visual connection to nature
- **Better look and feel:** e.g. visually attractive, locally sourced natural materials.
- **Better for people:** e.g. safe environment, access to natural light and views
- **Better working:** e.g. recycling and waste management solutions
- **Better value:** access to nature, green infrastructure, shared community spaces





Energy Strategy

The energy strategy follows a hierarchy which focuses on efficiency as the first step to reduce greenhouse gas emissions. The design will identify opportunities for efficiency in the envelope and systems to minimise energy consumption and explore the potential and implications of targeting Net Zero emissions in the future

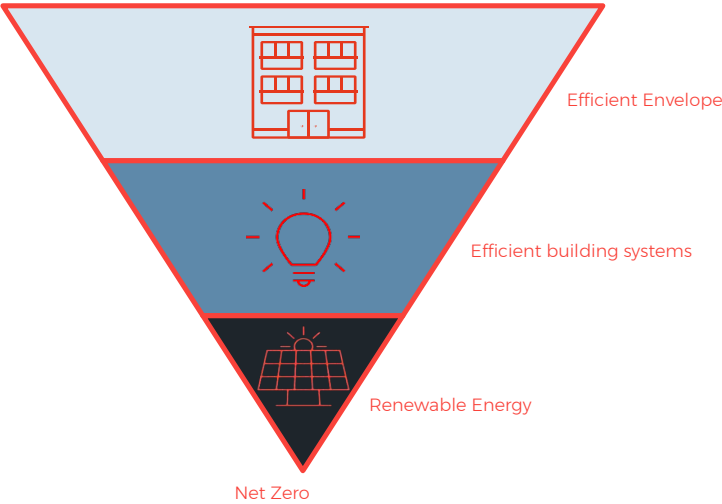


Figure 1 Net Zero Energy pathway

A broad range of initiatives can be implemented to reduce operational greenhouse gas emissions. These include passive design principles to reduce air conditioning and lighting demands and encouraging the use of active and public transport.

The installation of more efficient building systems and onsite renewable energy will also result in significant reductions in operational greenhouse gas emissions. The following initiatives are being investigated to reduce greenhouse gas emissions within the Shoalhaven Hospital:

1. Passive design in the building envelope
2. Efficient HVAC systems
3. Efficient lighting selection
4. BMS to monitor energy consumption and manage system controls
5. Electrification or electrification ready
6. Renewable Energy
7. 5 Star NABERS for Hospitals target



Passive Design

- **Orientation:** Massing options have been assessed to prioritise a northern orientation to optimise solar control.
- **Focus on shading:** Improved shading to provide selective solar control for summer and winter – with a northerly orientation effective shading can be provided through horizontal projections or eaves. On the east and west, vertical shading will be considered where horizontal shading is not effective.
- **High glazing performance:** Glazing with a good solar heat gain coefficient will be selected to mitigate heat gain in summer. Double glazing will reduce heat loss overnight and in winter, and will improve the efficiency of the mechanical systems
- **Insulation:** Addressing thermal bridges in the construction will be important to ensure effectiveness of the insulation in walls, roofs and floors.
- **Natural Ventilation:** Options to provide mixed mode ventilation will be explored for as many spaces as possible. The massing will be selected to maximise potential for utilising summer breezes to assist with passive ventilation.



Biophilia

The concept that humans have an affinity with the natural world is known as 'biophilia' and highlights our psychological need to be around life and life-like processes. As modern society has evolved, we have moved from a species that has had constant interaction with surrounding ecosystems to one that spends 90% of our time indoors.

The project will address this need for a connection to nature by implementing biophilic elements in the design through natural incorporation of patterns and human-nature interactions. Examples include:

- Internal plants,
- external landscaping,
- natural finishes such as timber, stone,
- carpet and wallpaper that mimic the colours and patterns of the natural environment,
- access to daylight and views and the outdoors.



Climate Resilience

Climate change is a current and future threat to business continuity, and for NSW Health's ability to deliver healthcare services to the community. We must deliver resilient assets to ensure they can service the community now and into the future when faced with shocks and stresses caused by climate change events.

Climate change has brought us following challenges:

1. Hotter, drier weather - Summers becoming hotter and hotter and winter becoming drier and less cold.
2. Flash-flooding - Increased rainfall intensity and storm events.
3. Decreased rainfall frequency
4. Increased wind
5. Increased bushfire risk

To adapt to frequently changing climatic conditions, our design accounts following:

- **Deep Shading:** Provision of deep shading, especially in east and north façades to reduce direct sunlight during summer and allowing sunlight during daytime during winter providing sufficient natural light and radiation reducing heating load.
- **Balanced Glazing:** Providing appropriate proportion of glazing in all directions to ensure reduced solar heat gain, improved natural lighting and optimum energy efficiency and comfort.
- **Mitigation of Heat Island Effect:** Exploring opportunities of increased vegetation, green roofs, water bodies and green walls ensuring reduction of ecological impacts.
- Use of Landscaping to provide shade and passive cooling





Health & Wellbeing

Natural elements, such as plants and daylight, have been linked with health-promoting benefits, including decreased levels of depression and anxiety, increased attention capacity, better recovery from job stress and illness, increased pain tolerance and increased psychological well-being (WELL V2 Manual). The presence of water, natural light and nature views can impact mood, memory and performance.

• **Patient Centric Design:** It is important for the design to be focused around the health and wellbeing of the patients, and the movement around the spaces of both the patients and their visitors and health carers. Human centred design approach including:

- Intuitive wayfinding and welcoming places
- Views and access to daylight
- Encourage stair usage through design prompts
- Consider circadian rhythm in lighting design
- Biophilic design
- Address heat island effect
- Functional public domain spaces that allow for relaxation, respite and social interaction
- Filters to improve quality of ventilated air

• **Daylight access:** Daylight levels in the space may be optimised through a combination of narrow floor plates, skylights, high ceilings and light shelves

• **Spaces with Natural ventilation:** Natural ventilation strategies will be investigated and applied where appropriate.

• **Outdoor space:** The hospital spaces will be arranged to enable maximised access to a variety of outdoor spaces, including access to the outdoor green space, smaller landscaped courtyards, and plant features. The access around the hospital will be designed to facilitate access to the outdoor green space for both hospital patients, staff and visitors.

• **Internal stairs:** Promoting the use of stairs internal to the building has been found to encourage short bouts of health enhancing physical activity throughout the day, while having the secondary benefit of reducing energy consumption by lifts.

• **Access to Views:** A combination of shading devices and opaque façade elements should maintain views while controlling solar gains.



Indigenous Design

Hospitals provide many important functions within the community and there is growing evidence to support that improved connection between the healthcare system and the communities it serves improves patient outcomes, as people are confident to seek help when it's needed and trust that they will receive the highest possible level of care.

The project will engage with local Indigenous stakeholders, and engage indigenous design consultant as part of design brief



“Nurses exposed to at least 3 hours of natural light per day experienced less stress and were more satisfied...”

(Alimoglu & Donmez, 2005)

“Patients with a view of nature have reduced stays and need less medication...”

(Ulrich, 1984)



Transport

Traditionally designed to prioritise vehicle access, hospitals must adapt to incorporate pedestrian paths, cycle-ways and end of trip facilities to encourage staff, visitors and (where possible) patients to cycle, walk or catch public transport. A focus on safety will contribute to this, with good lighting, natural surveillance, and clear wayfinding. Carparks that cater for electric vehicle charging are another way to reduce transport-related emissions without compromising convenience and accessibility.



Sustainable Water

Water consumption can be reduced through assessment and implementation of a sustainable water cycle which will require close coordination with the hydraulic engineer, architect, civil engineer, landscape architect and the ESD consultant. Initiatives being considered for Shoalhaven hospital include

- Highly efficient sanitary and amenity fittings
- Reuse through rainwater harvesting,
- Condensate, hydrant and hose reel test water reuse. This reuse water is proposed for non-potable uses such as cooling towers, irrigation and toilet flushing.
- Other design initiatives to reduce water consumption in medical processes should also be considered, as well as opportunities to reduce water born pollutants and peak flow through stormwater detention and treatment.

Materials, Waste and Circular Economy

The redevelopment of Shoalhaven Hospital prioritises reuse of the existing buildings where possible, to provide health care needs with minimal materials consumption. This strategy reduces waste from demolition and construction, reduces new materials consumption, and reduces emissions associated with materials transport and construction activities.

The construction of the new building and continued operation of both the new build and refurbished areas will focus on circular opportunities to continue responsible materials management.

A circular economy aims to create a closed loop of resources, ultimately resulting in the elimination of waste.

Reducing environmental impact and emissions associated with waste starts with procurement and considering the whole lifecycle of all the products required and consumed by the hospital. Efficient and sustainable waste management will ensure that waste is transported, stored, treated, recycled and disposed of in the most environmentally responsible manner possible.

Medical facilities including hospitals, laboratories, day-clinics typically generate large volumes of waste, most of which ends up landfill. Significant opportunities exist to better manage medical waste by increasing recycling, reducing consumption and reducing overall waste to landfill while maintaining all safety protocols.

Materials Opportunities

Design for lower impact materials selections including alternatives and responsible suppliers of Concrete, inc. geopolymer concrete, Steel, Timber and Recycled materials

Selection of materials that consider life cycle and end of life options:

- Durability
- Adaptability
- Low maintenance
- Use materials with Eco-labels, e.g. Ecospecifier, Environmental Product Declarations etc
- Health Impacts:- Low VOC, Low or no formaldehyde content, No PVC for standard PVC uses

Waste Management Opportunities

A holistic waste management strategy to:

- Review current site waste operations, operational procedures and policy
- Reduce consumption to reduce cost and spatial requirements for waste
- Promote stream separation for increased diversion from landfill

Implement efficient waste equipment and loading arrangements to improve efficiency, reduce cost, increase safety

Effective waste management strategies and materials selections can more than halve the amount of waste sent to landfill.



Education and behaviour change opportunities:

- Promote waste avoidance
- Compostable food trays and cutlery
- Avoiding single use plastics where possible, such as disposable cutlery in cafés
- Increased use of re-usable containers (instead of e.g. cardboard)
- Food organics from catering
- Packaging from procedural kits
- Separation of good/deliveries packaging
- Recycling of hard waste and equipment

Introduce procurement processes that reduce packaging



7.2 Landscaping & Heritage

Landscaping Strategy

The landscaping for Shoalhaven Hospital Redevelopment will be developed in line with the ISLHD Health Care Services project principles which are that:

- The hospital has a strong connection to the natural environment to promote wellbeing
- Access to ambulatory care is promoted through a prominent external presence on the campus and physical connections with the hospital
- Shoalhaven Hospital is designed to promote cultural safety and to maximise its connection to the country of the First Nations people on which it is situated
- The project is a vehicle for building community partnerships and participation with ISLHD.

One of its key objectives is to provide culturally appropriate facilities to meet the needs of the First Nations people. With this in mind, the landscape and First Nations people's connection to country is of prime importance and by providing a strong connection with the natural environment and cultural identity, this protects the health and wellbeing of Country and by extension all the community.

Sustainability is also linked with landscape and the current Government Architect's draft Connecting with Country provides a framework for sustainability informed largely by the experiences and knowledges of people who work on, and are from, Countries in and around the Sydney basin.

To incorporate sustainability and shared histories of cultural landscapes into project design principles, the intent is to:

- Identify the Aboriginal knowledge holders and contributors early in the project to have a comprehensive Aboriginal influence throughout the project
- Acknowledge all Aboriginal People's contributions and input into the design during and after to honour the intellectual property of the culture
- Draw upon available research to gain understanding of local history and culture which reveal traditional ways of recording knowledge and build relationships within the Aboriginal community.

Consultation with the local Aboriginal community has commenced and their input outlined in the Landscape Master Planning Report

In summary, as stated in the draft Connecting with Country: "Since time immemorial, our ancestors, the First Peoples, have been caring for Country in a sustainable way, passing on this continuing responsibility and custodianship to countless generations."



Response to Aboriginal Culture and Heritage

- Further consultations with the local Aboriginal people are proposed so as to further appreciate and integrate a response to both further stories and stories already told
- Indigenous landscape architect engagement
- Connections to gathering spaces (such as the lookout across the Shoalhaven River) will be included in the overall landscape plan. Views to the Mountains will be provided
- Quiet areas with kitchen facilities will be integrated with the interior design
- Multiple use of languages will be incorporated in the wayfinding design. The extent of relevant languages will need to be investigated with the local indigenous community
- A generous public stair will be provided with a well-proportioned tread riser relationship for ease of access
- The large blackbutt tree holds particular historical significance to the Nowra community. Options have been developed to provide considerable space around the tree, as consideration for the tree is important in the preferred hospital design option. An arborist is currently treating the large blackbutt tree, and germinations will be made from the tree so that saplings may be included with the landscape plan. The future size of these need to be considered in the landscape plan
- The bush tucker garden will be integrated into the overall design
- A mix of native and exotic planting noted
- Maintenance of the landscape is an important task to be included within the future management plan.



Drone Panoramic Photo

7.3 Wayfinding

Good wayfinding starts with the effective planning and design of spaces and should be embedded into the early master planning and concept design stages of a project, laying the foundations for an intuitive wayfinding system which is able to be further enhanced and developed using other tools in the wayfinding system.

The design of buildings or a collection of buildings impacts the way people interpret and find their way around them. Buildings and their components can be part of a wayfinding support system and provide information to people making their way around a building or campus. The presentation and design of entrances, foyer spaces, public circulation spaces and ‘landmarks’ can assist people in developing a clear ‘mind map’ for their patient journey.

The Shoalhaven Hospital redevelopment presents opportunities for improving wayfinding within the existing campus with the introduction of a new building and its links to the existing buildings on the site. The wayfinding system will be made up of the combined impact of architecture, landscaping, interior design, lighting, art, signs, people, printed and digital information. Used together, these components can communicate information effectively, helping people make good decisions about how to get to and from their destination.

With a focus on the patient and visitor experience, the following areas will be developed:

Campus Wayfinding

- Consistency is achieved by designing all elements in the system with a cohesive visual language.
- Clearly identify the facilities and entrances on approach
- Orientates people once they arrive as they will need to be able to clearly identify and recognise the approach paths and entrances

Car parking Wayfinding

- Provide clear direction to parking and drop-off areas
- Clear separation of ambulance, services and public traffic

Entry Wayfinding

- Building entrances that are clear landmarks
- Visibility and proximity to reception desk and landmark lift core from point of entry

Public Corridors and Building Links

- Provide memorable features through colour/graphics/art and the like to help people orientate and memorise their journey

Department Wayfinding

- Clear department identification (theme and colour)
- Clear and recognisable entry points and reception desks
- Use of indigenous place names as a source for department and shared rooms if considered appropriate by the local Aboriginal communities

Internal Department Wayfinding System

- Development of bed and bay numbering which can be seen from a distance
- Development of signs with visual contrast
- Use of colour and/or themes in the secondary signs which continue the department identity



7.4 Traffic and Car Parking

A traffic assessment for the redevelopment works will be undertaken by the project traffic engineer and additional parking spaces will be delivered as required to meet Statutory requirements.

Recent car parking development on site includes the construction of the multi-storey car park. This car park was delivered to consider future vertical or horizontal expansion.

A new patient vehicular drop off will also be provided at the Hospital main entry, along with Emergency Department drop off and Ambulance access.

8.0 Next Steps

- Ongoing consultation and coordination
- Progression of the Concept Design for the project
- Development of the Final Business Case for the project
- Progression of a Planning Approval application





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