THE BUILT FORM

As in many healthcare facilities the articulation and composition of the external façade elements play a critical role in navigating to points of entry and reflect the activities which are occurring within the building.

The establishment of the main two story mass of the building (Level 2 & 3) has been a direct response to the clinical planning and need for internal courtyards for daylight. In establishing a strong street presence the legibility of the main points of access for Ambulance and Ambulant Public have been identified with the design of canopies above the entry points, and the cut back of the façade along the North creating a visual cue of the public access to the Emergency Department. The built form of the ward areas at the level above suggests a uniform approach to the façade, but provides articulation in response to the internal clinical areas. The cut backs in the north façade align with the internal planning and break the monotony of a simple box atop the solid mass of the Emergency Department below. Further articulation of the simple box has been achieved by the strong form of the precast fire stairs and framed sections of glazing to corridor and staff areas. The plant to the top of the building has been set back from the perimeter edges creating clearly defined articulation of the plant to the roof, and less impact of overshadowing to the internal courtyard areas.

In recognising the clear benefits and need for daylight within the clinical and public spaces, the built form has responded with a series of internal courtyards. These act as light wells down into the internal spaces and will also provide the opportunity for external spaces within the building for patient and public spaces. The provision of these spaces is in keeping with the most recent 2002 addition to the campus, with the courtyards forming a key element of the internal amenity and way finding.

The impact of the expansion on adjacent existing areas should be noted, the North facade of the new building will be approximately 50m from the main frontage to the Kingsway, a reduction from the current distance of 57m for the main mass of the north facade. On the west facade, the current building line of the ED entry sits approximately 75m from the existing Karrena Road and adjacent residential areas, the proposed building will reduce this distance to 65m .

The proposal for external lighting is to be confirmed through the detail design process, but the intent is one that responds to the site need for way finding and security whilst being sensitive to adjacent residential areas.

A SYMPATHETIC PALETTE

The selected palette for the built fabric contained is in response to the key elements of access and also the precedence from the existing campus in its response to current elements used in the façade. The base of the new building is clad with concrete with brick and glass, consistent with the existing fabric adjacent and providing a highlight robust façade element to these highly used areas, with a selection of full height glazed walls to highlight the waiting areas and provide oversight of the external areas.

Aluminium cladding is proposed above the ED mass, with variances in depth and colour proposed to add texture to the façade. In the treatment of the internal courtyards we have maximized the extent of internal glazing where possible and again replicating a theme which forms a key element of the existing hospital.

The result is a contemporary building which will both enhance and complement the existing built form on the hospital site.

CRIME PREVENTION

The design of The Sutherland Hospital Redevelopment addresses with crime prevention through the planning and design of the new building and surrounding landscaping. It reduces opportunities for crime and maximises public safety through the following main principles:

1. Surveillance
2. Access control
3. Space/activity management.

Surveillance

External areas adjacent the building

The public entry of emergency is under constant surveillance through the used of full height glazing to both the waiting areas and reception/admin areas. This enables hospital staff to observe the adjacent entry and drop off areas. CCTV will also be installed so this area can be further monitored by the security team.
The ambulance arrival area also has full height glazing at its entry so hospital staff can see out into the ambulance zone. CCTV will also be installed so this area can be further monitored by the security team.
Both these areas will be well lit and are shaped so there are no crevices or niches for people to hide in.
The back of the new building is directly connected to the existing hospital, thus there are no ‘back of house’ areas to control or monitor.

Planting

Trellis planting has been suggested in front of the paediatrics and fast track areas. This is a privacy screen to shield these windows from passers-by. The nominated planting will be of low density to allow glimpses through to the areas behind. These areas will be well lit and monitored to ensure public safety in this area.
Low lying plants have been selected for garden beds around the edges of the building, reconfiguration of the main entry and car parking areas. This is to ensure view lines from staff, CCTV cameras are maintained and there are no large trees for elements to hide behind.

Access Control

Both the public and ambulance entries for Emergency are open 24 hours.

As mentioned above, these entries and adjacent spaces will be constantly controlled and monitored by ED and security staff.
All other doors on the perimeter of the new building are for fire egress. As they open directly onto patient areas, they will be locked at all times and controlled with swipe card by departmental staff. These doors will be glass to provide surveillance out to monitor external areas immediately adjacent.
All fire escape doors will be locked to the outside.

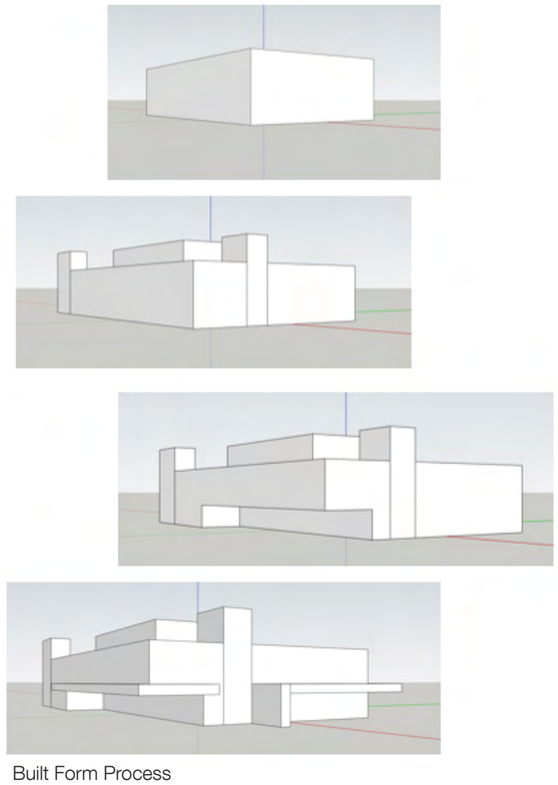
Space / activity management.

Internal areas

Since this is a clinical environment, the internal environments will be controlled by hospital staff. Current hospital policy regarding staff safety will be implemented within the new building.

External areas

As mentioned above, ED and security staff will manage the public areas within, adjacent as well as the entries of emergency. The elimination of items which can create hiding spaces and obstruct clear lines of sight provide building surrounds with open planning of the external areas which can be easily managed. These area will be well lit and monitored by on site security.



Built Form Process

Proposed building fabric composition

01.02 SYSTEM DESIGN

During the life of a typical hospital building, it is likely to have been adapted several times to accommodate changing service need, technology advances or improvement to patient care.

The proposal has been developed to anticipate any potential future service change with minimal disruption to the structure, facade or services. This inherent flexibility provides an efficient and sustainable building that will adapt to suit the future needs. The building form has been shaped in response to a patient focused design, maintaining good natural light and outlooks to courtyards, landscape and outlook.

The key components of this 'system design' approach are:

8.4m square structural column grid
This ensures that all likely clinical scenarios can be accommodated within an efficient and adaptable structure. The grid is square to enable a planning flexibility along two axes.

Facade
Most patient areas require wall spandrels to the window sills for distribution of services or furniture relationship. To maximise the natural daylighting and view amenity of these spaces, long vertical slot windows have been provided. Within these slots vertical infill panels are arranged to 'cap' the internal walls and allow some adaptability in the future to accommodate new internal room arrangements. .

The glazing is proposed to be recessed into the facade to provide summer shade, while allowing winter sun penetration. This window treatment also highlights key patient/public pathways around the building to articulate their use and provide outlook to landscaped internal courtyards. Primary cladding materials are to be lightweight and high performing in terms of thermal resistance and acoustic insulation. The cladding system will enable potential for minor adaptions should they be required in the future. The cladding will also be low maintenance to ensure that it's appearance does not degrade over time.

Outboard service cores
Where possible, disengaged vertical services shafts and fire stairs from the main floor gives more flexibility for internal arrangements to suit service requirements. Generally these externalised cores assist with the articulation of the building massing and bulk.

Facade Development Sketches.

01.03 STAGING

Whilst this proposal sits within the first stage of the overall masterplan, the main works proposed are envisaged as being spilt across 5 possible phases. These are outlined below:

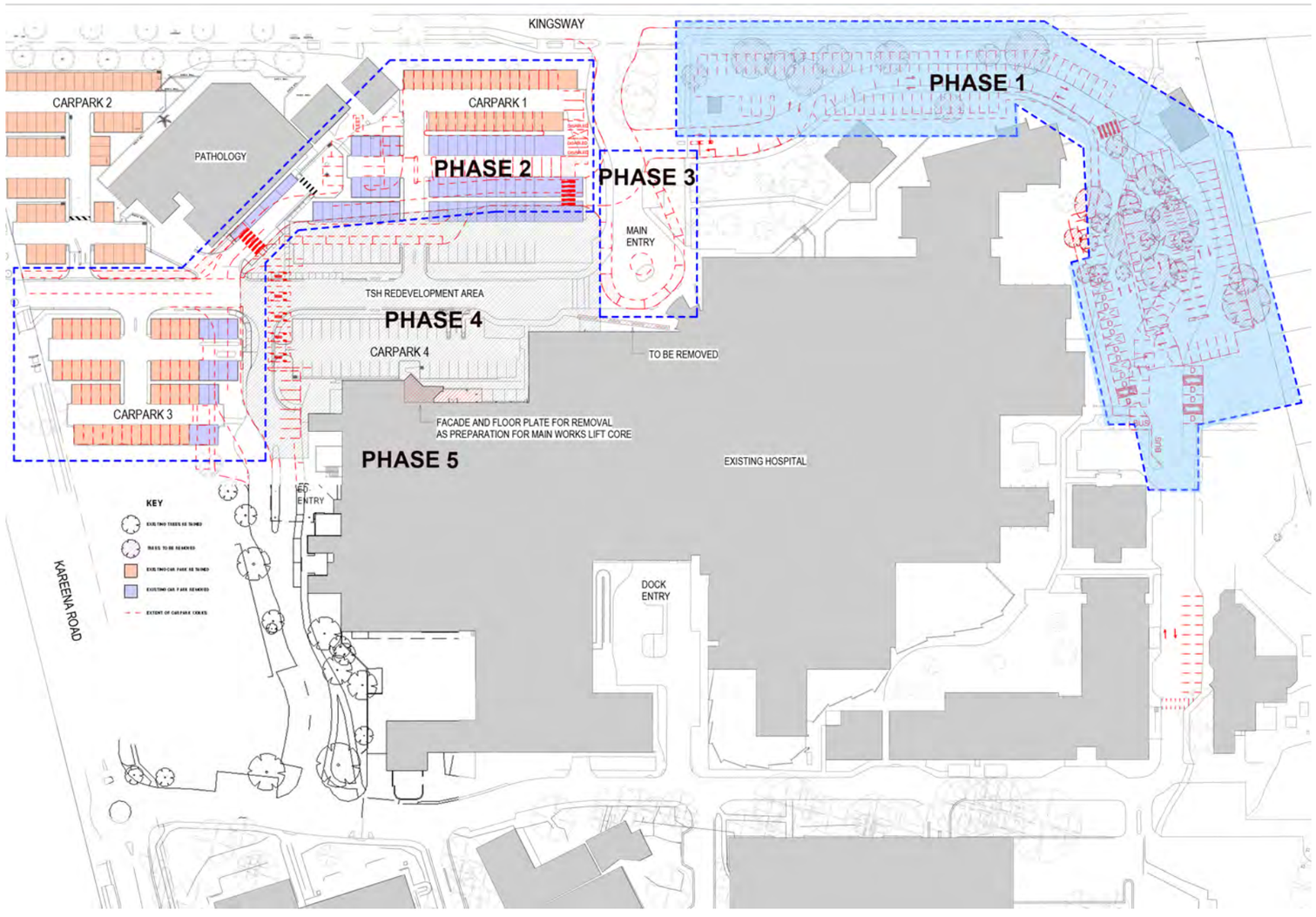
Phase 1 - Early works carpark, the first phase of works is aimed to reduce the impact on carparking numbers as part of the proposed main works. These works are currently underway and have been covered as part of a separate approval under Part 5 of the EP&A Act.

Phase 2&3 - Main Build Enabling Works. Works to the existing site roads and infrastructure to facilitate the new build.

Phase 4 – New Build Works. Construction of new emergency department, associated wards and HDU unit.

Phase 5 – Refurbishment works to existing areas either vacated as part of the new build or works in support of the new build clinical expansion. These are proposed as internal alterations only.

This current proposal for the staging of works has been completed with a view to ensuring the continuity of access and operation for the site whilst works are underway. The phasing of the project needs to be confirmed upon appointment of the main works contractor may vary slightly due to site constraints and unknown issues yet to be resolved in the design process.



Staging Proposal

01.04 ESD STATEMENT

The ESD initiatives considered by the design team formed a list of core objectives:

1_Incorporate good design and management initiatives to encourage sustainable practices during the construction and operation

2_Achieve a high level of Indoor Environment Quality, to promote the health and wellbeing of building occupants

3_Achieve high levels of energy performance to reduce environmental and economic impacts associated with excessive energy use.

4_Consider specific energy initiatives that will bring real recurrent savings to the project.

5_ A careful review and selection of the built fabric elements with a view to applying sustainable product selections where at all possible.

The design as a minimum will comply with the energy efficiency requirements of Section J of the National Construction Code (NCC 2015, previously known as the Building Code of Australia).

The internal environment of the building will play a critical role in both the occupants wellbeing and the buildings performance in relation to ESD performance. The mechanical design provisions within the current proposal provide the following initiatives:

The following mechanical services initiatives are being considered for this project:

1. Energy efficient FCU's with EC/DC motors where possible;

2. Pre-tempering of outdoor air with relief using air to air heat ex changers where appropriate;

3. The use of efficient refrigerants that have low ozone depletion potential and low global warming potential;

4. Maximise efficiency of full and part load performance of HVAC systems;

5. Incorporation of passive conditioning techniques where applicable, to reduce the overall air conditioning loads. Techniques to be considered include:
- Shading of windows to prevent solar penetration in summer but allow passive heating in winter
- High performance building envelope

6. The air-conditioning system is designed to either shut down or be set to a wider temperature control band, when a spaces is unoccupied

7. Dedicated secondary CHW and HHW circuits to ensure WWBH has future means to interrogate and apportion building energy use

8. High efficiency water-cooled chillers selected to give the optimum coefficient of performance.

9. Chilled water storage enabling chillers to meet low loads while retaining a high COP.

10. The use of a FCU's sytem in parts of the building where the functionality concluded that this was the best fit.

11. The use of variable speed drives on all appropriate fan and pump systems, coupled with high efficiency motors.

12. The use of high efficiency equipment such as chillers with environmentally friendly refrigerants such as R134a and R407c and high coefficients of performance and ECDC motors on FCU equipment.

13. Outside air economy cycles on all appropriate air handling systems.

14. Efficient zoning of air handling units to avoid the use of reheat.

15. A fully automated Building Monitoring and Control system to schedule and optimise plant to maximise efficiency.

16. Varying condenser water temperature control which will allow condensing water temperatures to reduce below their set-point when it is suitable to do so. This will in turn reduce the load on the chillers compressors resulting in significant energy savings.

17. Fully modulating gas boilers with buffer tanks. This will allow the boilers to preform at high efficiencies during low load conditions.