FRONT OF HOUSE

A careful selection of materials has been made that further reinforces the connection this hospital has with the Cudgen area and specifically the land on which the hospital will be built. Material selection will be selected using rigorous protocols to ensure the most sustainable, maintainable and fit for purpose selections.

The dual core arrangement to access the east and west wings of the building is clearly separated by the main public lobby space. To give each lift core clarity in terms of way-finding we have clad each block in a robust textured terracotta wall tile system with two distinct colour-ways. The two colours have been extracted from the very distinctive core samples which were extracted from the soil testing process. The Tan and warm grey marbled clays have been separated and used as the guide to distinguish each core resulting in a grounded and earthy combination of neutrality and colour.

The other key material treatment in the main lobby will be the introduction of hoop pine timber look which will be applied to the 8 circular columns which define the double height lobby. The columns will represent the hoop pine forests which stood in this location before agriculture was introduced. The columns also are emblematic of the safety the forest provided not only from the stories of the local indigenous people but also the sense of respite these forests provided to the local fauna and extensive bird-life.

The timber expression will continue onto the ceiling and be expressed as a series of linear patchwork blocks designed to integrate lighting, services and acoustic treatment. The linear patchwork effect to the ceiling will continue externally as the defining treatment to the canopy structures.

Figure 92. Interiors, Front of House Material Palette - Preliminary

PRELIMINARY MATERIAL SPECIFICATION

1. Knauf - Mineral Ceiling Tiles
2. Knauf - Perforated Acoustic Plasterboard
3. Supawood - Perforated Acoustic Timber Ceiling
4. Big River - Hoop Pine ply - Joinery/Columns
5. Instyle Vinyl- Zone, Dance
6. Instyle Vinyl- Zone, IN
7. Instyle Vinyl- Zone, Comfort
8. Laminex - Various colours - Joinery
9. Stone Outdoors (Concrete Redefined) - In-situ Concrete (Colour tbc) - Lobby Floor 2.
10. Tarkett - Primo Premium - Terracotta - Retail F.O.H.
11. Stone Outdoors (Concr.Redefined) - Shot, Erskin- Lobby Floor/ Stair
12. Stone Outdoors (Concr.Redefined)- Shot, Botanical - Lobby Floor
13. Interface - Composure - Sub Wait
14. NBK (Hunter Douglas)- Terracotta tiles cladding system - Lift Core

Figure 93. Project Render - Lobby Interior, Artists Impression

5.3 CLINICAL AREAS, STRATEGY AND DESIGN

Draw Inspiration from local natural materials to support the feeling of connectivity to the local context.


A


B


C


D

Figure's 94a, b, c & d. Design Reference Image

CLINICAL AREAS, MATERIALS PALETTE

Figure 95. Design Reference Image

PRELIMINARY MATERIAL SPECIFICATION

1. Tarkett - Primo premium, Medium Grey beige - Flooring
2. Tarkett - Primo premium, Light beige - Flooring
3. Stainless Steel - Hardware
4. Laminex - Various colours - Joinery
5. Interface - Composure, Navigate - Workspace flooring
6. Massa imports - Porcelain tile, Warm Grey & Mid Grey - Public Bathrooms
7. Instyle - Genre - Sound, IN, Comfort
8. Laminex - Dansk Maple - Joinery

Figure 96. Interiors, Clinical Areas Material Palette - Preliminary

5.4 WORKPLACE, STRATEGY AND DESIGN

Draw Inspiration from local natural materials to support the feeling of connectivity to the local context.

The hospital design brief adopts a collaborative workplace model (New Ways of Working), which seeks to centralize administrative functions characterised by an open, varied and flexible spatial and combined amenity structure. The central core zone of the building connecting the 4 quadrants from level 2 to level 5 hosts the co-shared administration zone. The proposed workplace strategy embodies the following design principles;

NEW WAYS OF WORKING

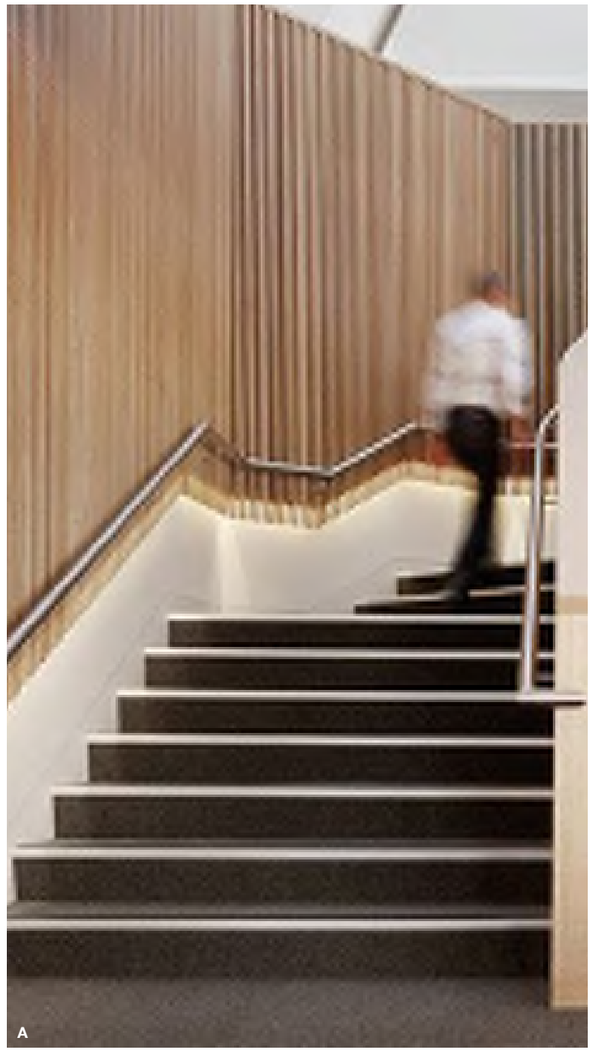
- Work style profiles are defined by differing behaviours in the space and levels of mobility
- The workspace design will incorporate the most flexible kit of parts to accommodate the requirements of all work style profiles.
- Varied work styles – A variety of work setting options will be provided to accommodate both desk based and collaborative activities
- Social spaces, central to the workplace will encourage collaboration
- Workplace drawn to key nodal spaces

MODULAR WORKPLACE/ FLEXIBLE DESIGN

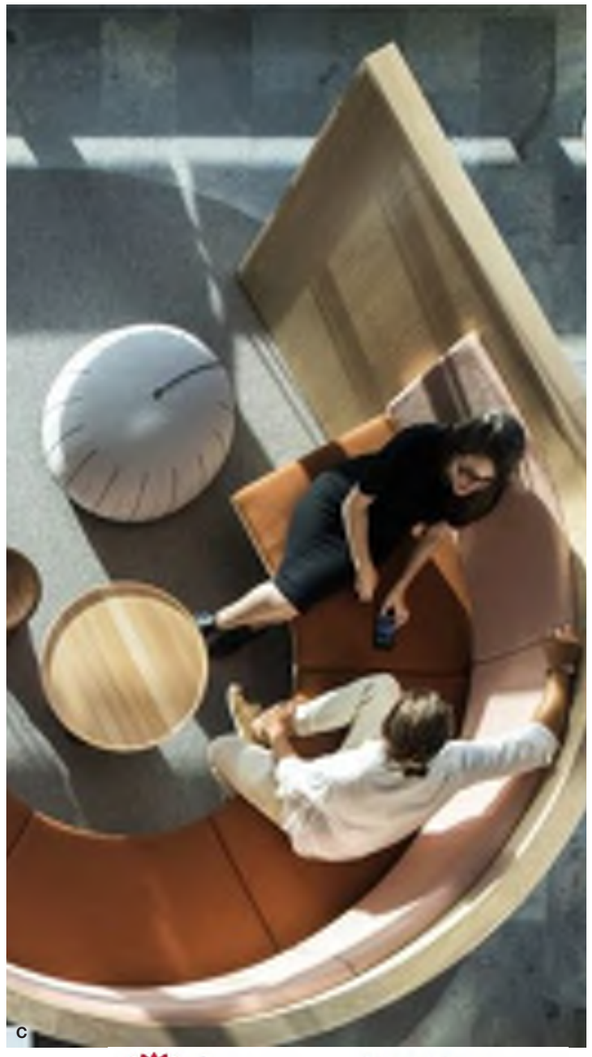
- Flexibility to change over time – flexible workspace design to respond to change over the long term featuring standardized design, minimal kit of parts, modular spaces and (scalability)
- Highly modular & flexible built form to minimize disruption and cost

CENTRAL CONSOLIDATED STAFF ZONE

- A dedicated staff area within overall building
- Clearly defined spaces for staff/ clear separation
- No public access
- Retreat & respite – getting away from pressures of the job & the public


A


B


C

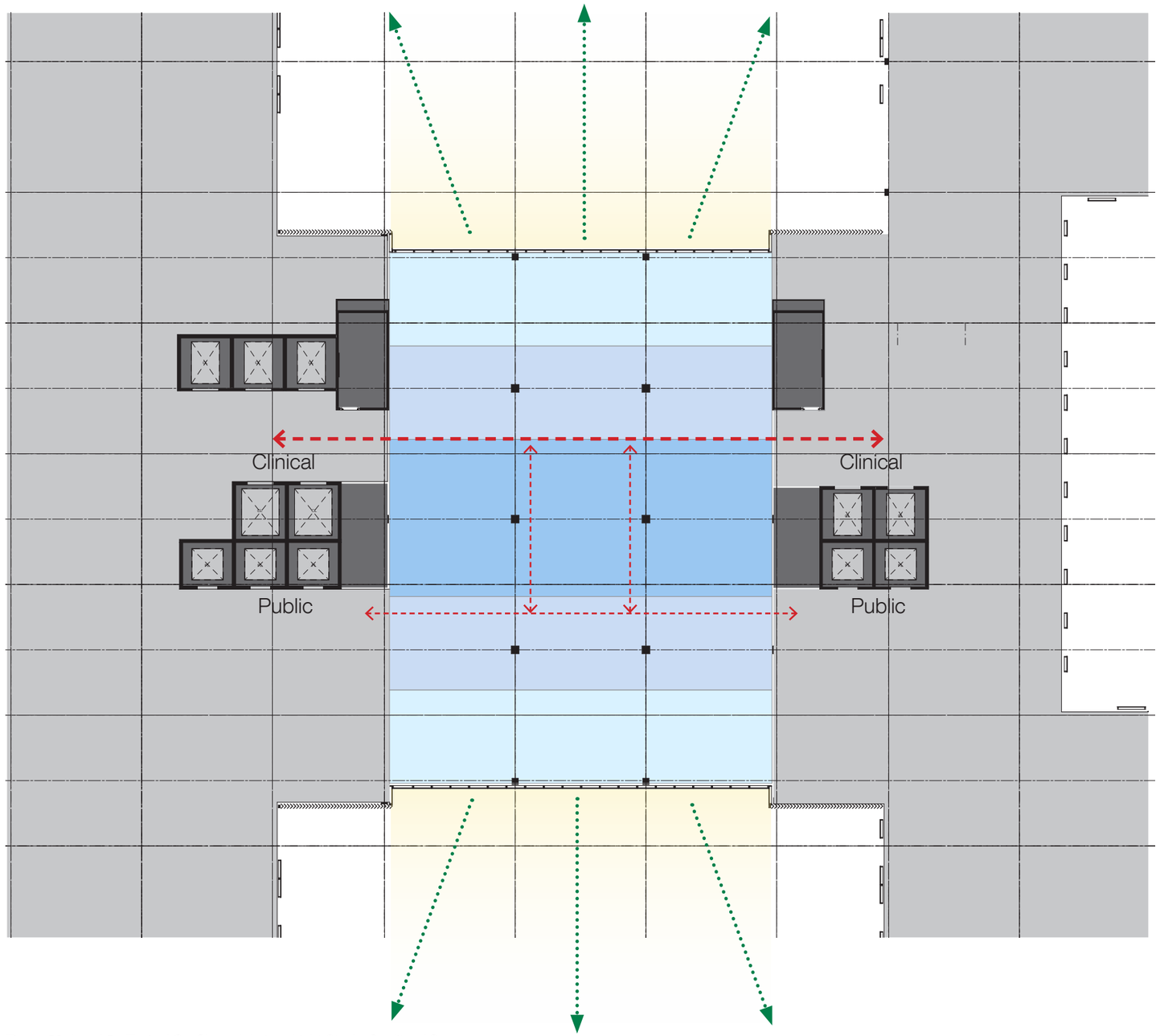
Figure's 97a, b & c. Design Reference Image

QUALITY OF SPACE

- Natural Light – locate open areas adjacent to the façade and built space away from façade.
- Permeable, transparent design of enclosed spaces - natural light will penetrate to glazed areas beyond.
- Utilize darkest zones for non- habitable spaces eg. store, utility areas
- Centralized communication stairs to connect work floors and staff – increasing connection and opportunities for knowledge sharing
- Promote social spaces to encourage coming together – promoting better culture
- Celebrate circulation pathways with direct relationships to building ordering axes

NATURAL MATERIALS

- Timber – warmth – Hoop Pine
- Hoop Pine forest – place of refuge & safety – constant throughout
- Use of materials to create gathering points – timber to joinery – a place to gather – warm & welcoming
- Creating focal point of nature through materiality and connection to outdoors
- Connection to the sky – upper levels of hospital – colour palette - blues, greys etc.



GRADE A SPACE: Optimal workspace zone

GRADE B SPACE: Good workspace zone. Optimal for offices and meeting rooms

GRADE C SPACE: Workspace support zone. Optimal for services and B.O.H. programmed spaces

Figure 98. Level 3 - Typical Co-Share Admin, - Light Study, Quality of Space

WORKPLACE, MATERIALS MEETING/GENERAL PALETTE

Figure 100. Design Reference Image

Figure 99. Interiors, Workplace Material Palette - Preliminary

PRELIMINARY MATERIAL SPECIFICATION

1. Autex - Cube, herald & pinnacle & savoye - Pin Wall
2. Interface - Composure, Deliberate - Flooring Generally
3. Interface - Biosphere, Tundra - Executive Flooring Generally
4. Laminex - Dansk Maple - Joinery
5. Aluminium - Linished - Fixtures
6. Massa Imports - Porcelain tile, Dark grey - Staff Bathrooms
7. Instyle Vinyl- Zone, Pedestrian
8. Instyle Vinyl- Zone, Sound

5.5 INTERNAL AMENITY

SOLAR ACCESS

The building has been designed to maximise the amount of daylight access to the various functional zones. Passive design measures promote a de-institutionalized environment that fosters a sense of normality and well-being, and enhances user comfort levels. Solar access also helps reduce stress levels and generally improves efficiency and productivity of the users.

Measures taken to improve solar access include;

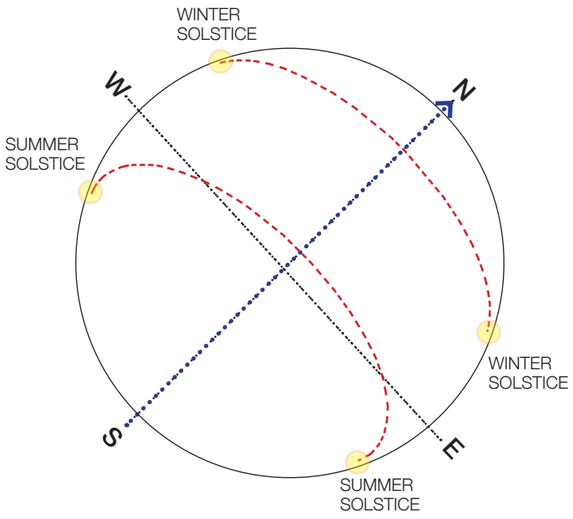
- Incorporating internal courtyards within deep plan zones where achievable within the clinical planning constraints
- IPU floor plates are based on a shallow two grid arrangement, allowing light penetration to central corridor spaces
- Window wall façade adopted where serving open plan co-shared administration workplace, enhancing amenity
- High performance glazing
- Planning for glazed apertures as end conditions to major circulation routes provide light into corridors

The main public spaces of the hospital have been located with visual or physical links to courtyard or outdoor landscaped gardens. The hospital street orientated east-west travels alongside a large east courtyard from which sun access is provided. The main north-south civic spine is designed as double height to allow deep sunlight penetration through this main space, providing a calm and welcoming entrance experience.

PASSIVE VENTILATION

Passive ventilation was considered at the early concept stages in the design of the hospital, however not pursued due to the engineering complexity and budgetary impacts associated. Where possible, the provision of balcony's and accessible courtyards have been provided for patient and staff use.

Passive ventilation options have been explored and have been adopted within the Health Hub building where functionally feasible.



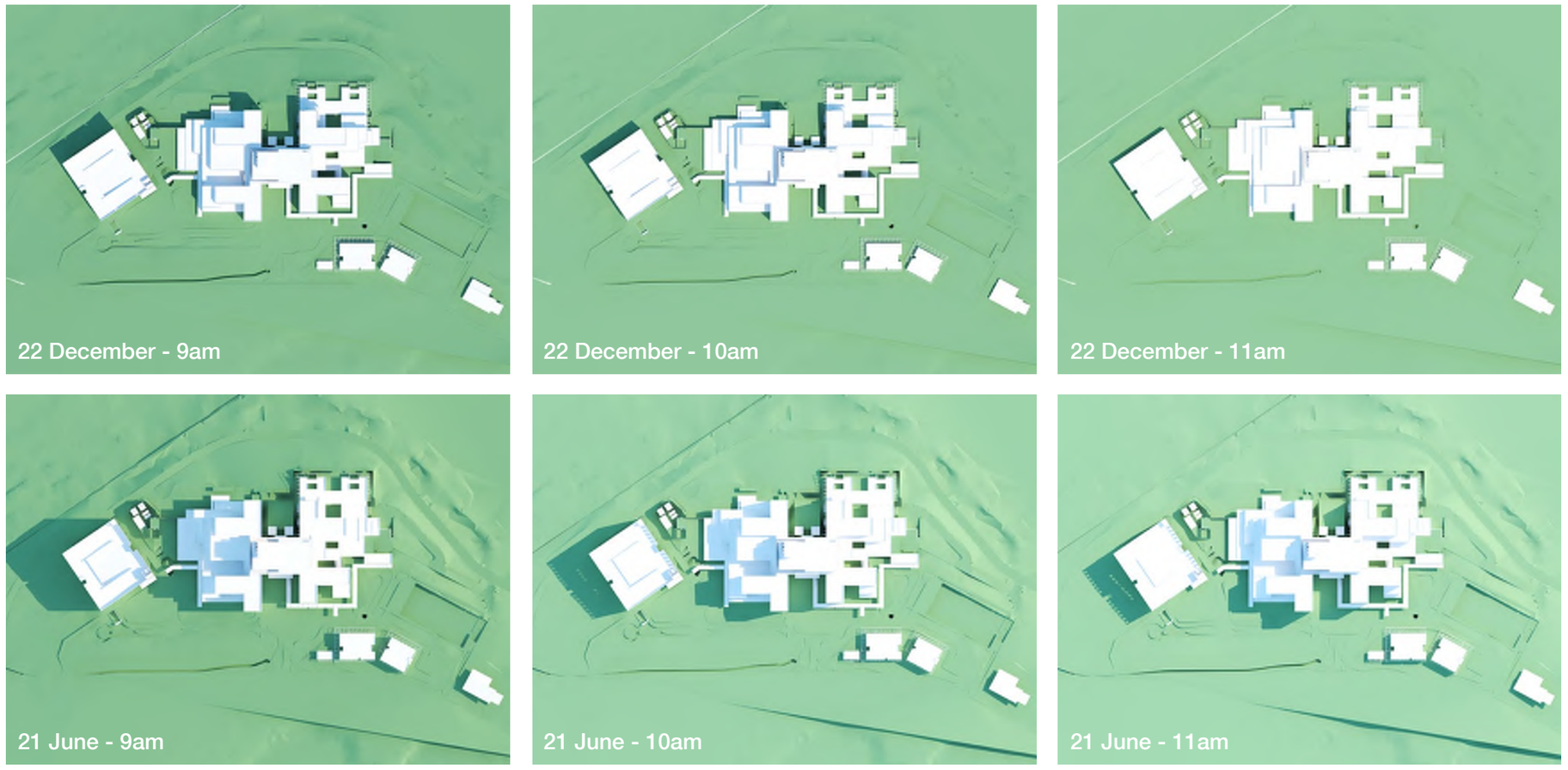


Figure 101. Solar Access Studies - 22 December (Summer Solstice) & 21 June (Winter Solstice)

SOLAR ACCESS (CONTINUED)

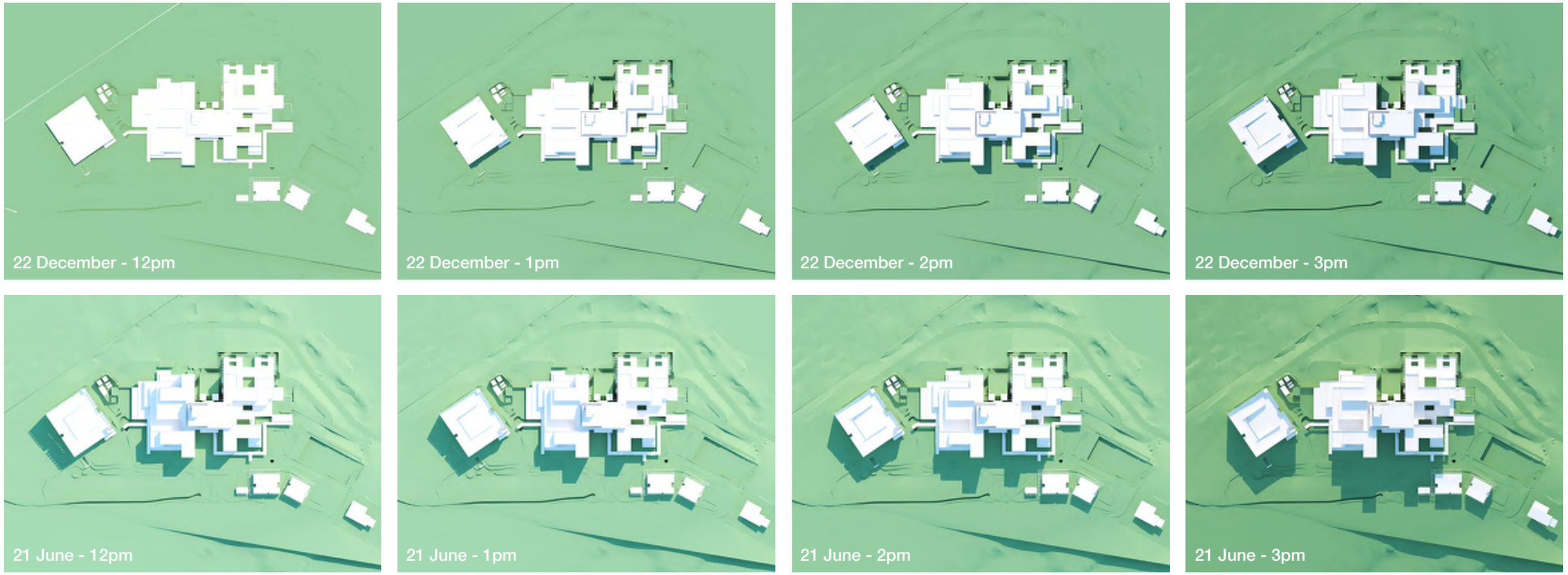


Figure 102. Solar Access Studies - 22 December (Summer Solstice) & 21 June (Winter Solstice)

ACOUSTIC SEPARATION

At schematic design stage major noise sources and operations were identified. Mitigation strategies have been incorporated into the design having regard for the relevant noise standards and guidelines.

The primary noise sources and preliminary approach strategies are as follows;

1. Chiller plant, located within the On-Grade central energy plant compound sited to the west of the emergency department:
- Chiller plant to be fitted with acoustic baffles. Spatial allowances to be provided at detailed design stage

2. Electrical generators, located On-Grade to the south west corner of the site
- Electrical generators to be housed in containers and concealed from view by screen enclosure.
- Additional landscape planting to be included surrounding the compound, providing additional visual screening and noise mitigation

3. On-floor in-patient unit (IPU) plant rooms, located on all levels from level 2 to 5 accommodating mechanical ventilation units. Plant rooms are located in close proximity with patient rooms.
- Acoustic insulation of near vicinity building envelope and elements will be considered at detailed design stage, in order to maintain compliance with the relevant standards and guidelines
- Alternative strategies including acoustic treatment (installing silencers) of air handling plant enclosures will be considered

4. Emergency helicopter arrival and departure
- Helicopter movement patterns have been identified by the aviation consultant as being minimal and intermittent.
- Acoustic insulation of near vicinity building envelope and elements will be considered at detailed design stage, in order to maintain compliance with the relevant standards and guidelines
- Non-openable windows within the IPU's
- Level 4 staff balcony to be covered

ACOUSTIC IMPACTS TO SURROUNDING LAND USES

The upper levels of the Tweed Valley Hospital will require acoustic attenuation, including insulating acoustic laminated glass as a result of the rooftop helipad located at level 7.

The central energy plant incorporating chiller plant is located On-Grade at basement level west of the hospital adjacent the emergency department. Noisy plant will be designed incorporating acoustic attenuation to mitigate impacts to hospital users and sensitive surrounding environmental receivers. Similarly the electrical generators located On-Grade in the south west corner of the site will be attenuated and screened to mitigate acoustic impacts to sensitive surrounding environmental receivers. Electrical generators are provided when power supply is interrupted, with intermittent monthly start-ups for required for maintenance and testing.

NOISE SOURCE

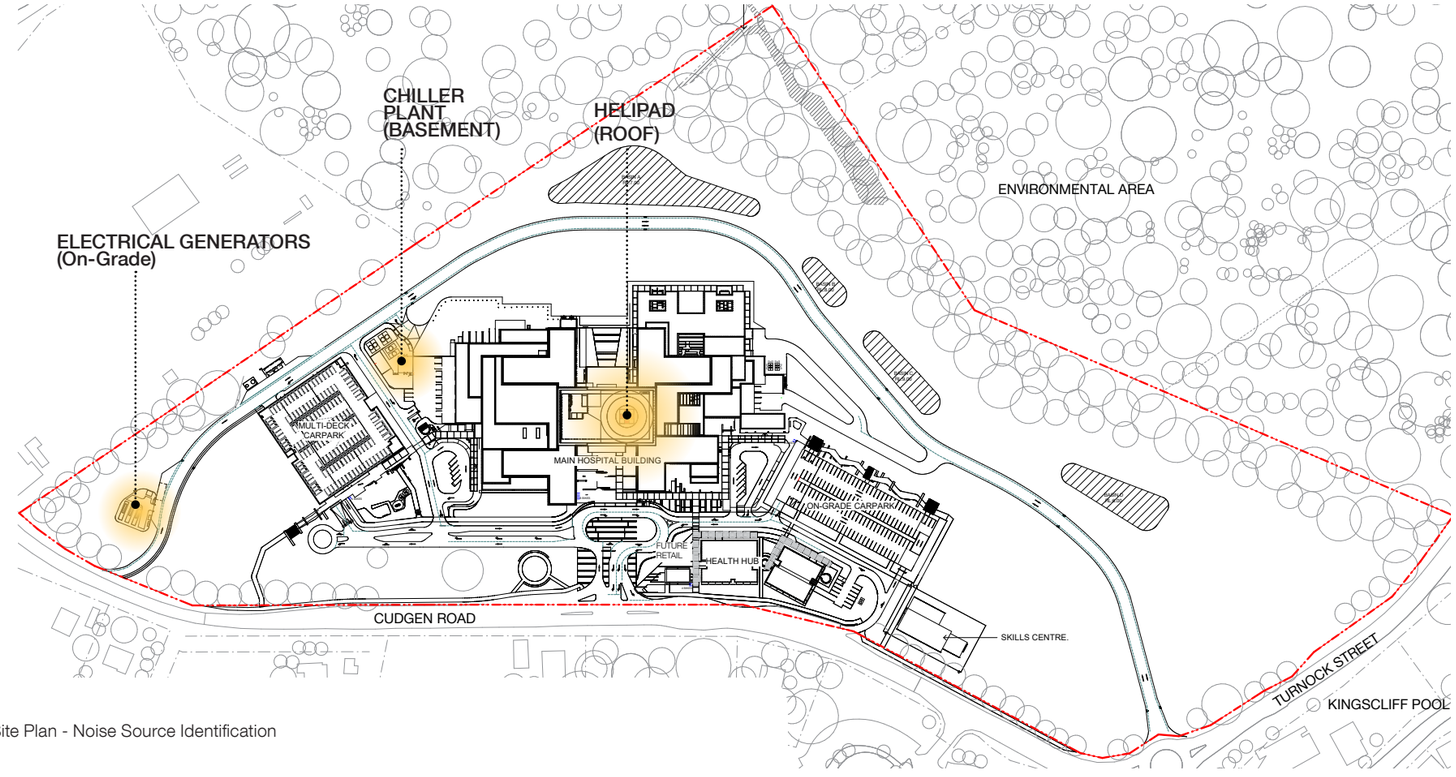


Figure 103. Site Plan - Noise Source Identification

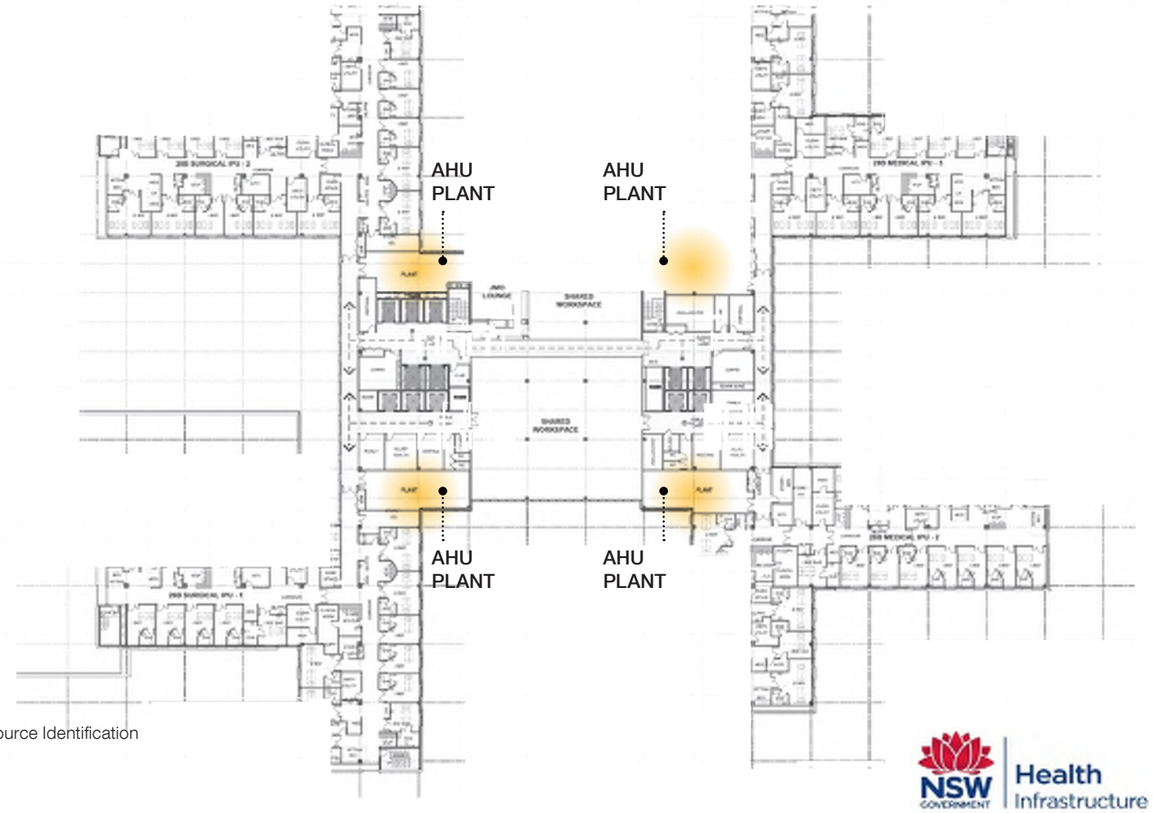


Figure 104. Typical IPU Plan - Noise Source Identification

VISUAL AND PHYSICAL ACCESS TO OUTDOOR LANDSCAPE (IPU, WAITING & CIRCULATION)

The typical L-shape in-patient unit (IPU) layout is designed to position patient rooms and bed space orientation to capitalise on the available 360degree resplendent views from the site.

A patient window view analysis was conducted, within the axis zones considering the distances to adjacent overlooking IPU rooms. The IPU's are spaced 39m apart where framing the south and north spatial axis. At the upper levels on the east spatial axis IPU forms are set nominally 33m apart, and at the upper west spatial axis at level 4 set 42m apart. Our study determined that approximately 39% of patient rooms achieved unimpeded distant views, with approximately 60% achieving oblique distant views, with a minimal 1% experiencing no distant views.

Major circulation corridors for example within IPU's have end-of-corridor window conditions providing amenity to internal circulation routes providing daylight and views. The IPU's corridors further celebrate this amenity by providing for social patient lounge spaces at the ends. Where clinical layouts permit circulation corridors terminate in this manner, with views to outdoors or into courtyard spaces.

Distant views to the east (north east) are towards the coast line and ocean, while views to the west (south west) are towards Wollumbin National Park (Mount Warning) and Mount Jerusalem National Park.

Staff co-share workplace within the central building zone provides for open plan office space, which having a functional demand for greater glazing percentages to improve daylight access, consequently also provides good visual access to landscape and the outdoors.

The 4-quarter IPU anchor forms frame view and movement corridors at ground level, leading into the campus gardens and walkway spaces surrounding the hospital.

The EIS submission included a Land Use Conflict Risk Assessment Report which advises; "Open spaces for patients should not be located along the southern frontage. By locating courtyards and balconies on the opposite side of the buildings to the southern farmland, the buildings themselves will provide physical screening of farm activities.".

While balconies have generally been located on the north and eastern sides of the building certain clinical functions located on the south orientated zones of the building require access to balcony space to support their respective clinical program. Where such situations occur balconies will be provided with 1.8m tall wind impermeable glazed screening.

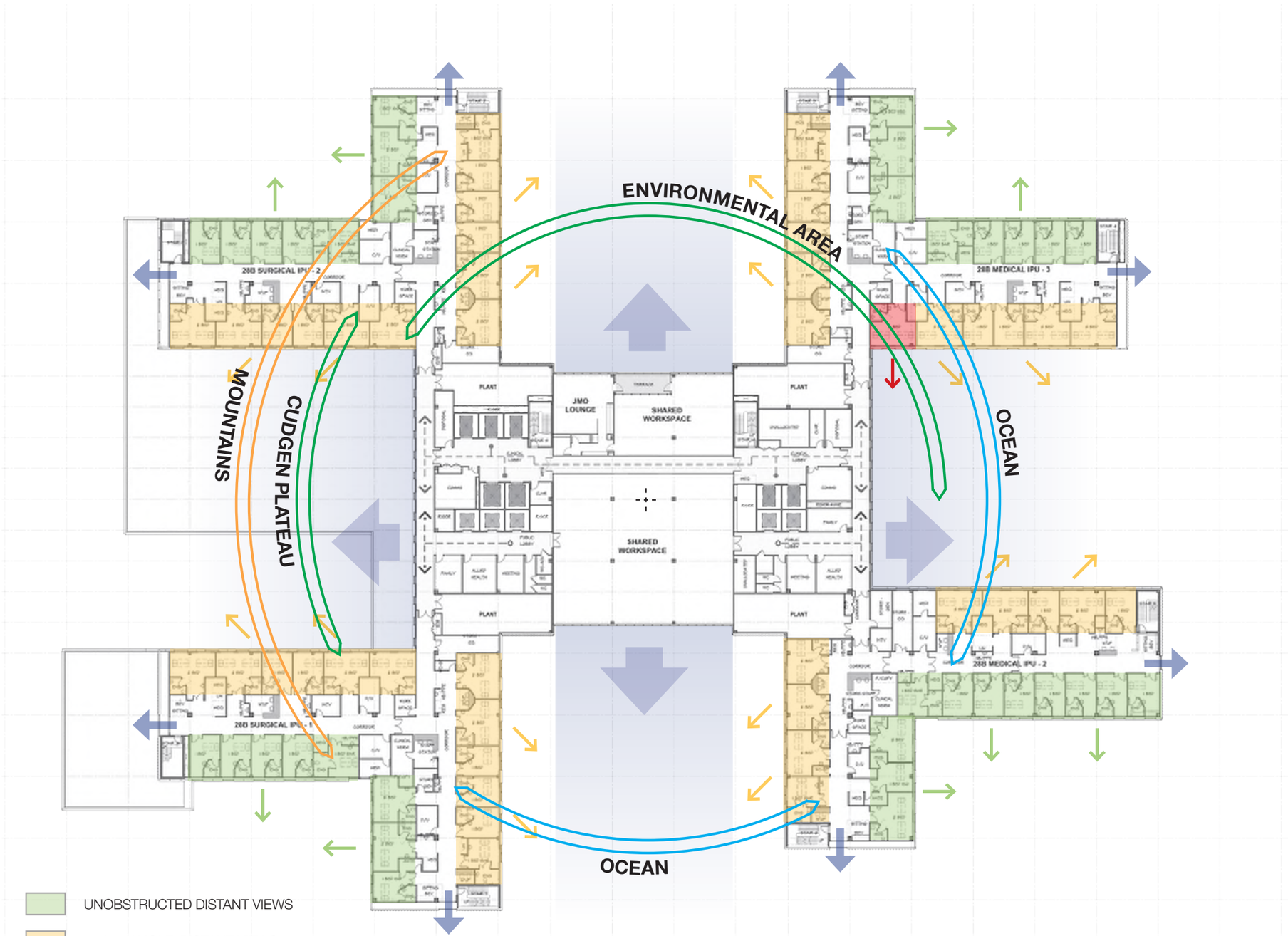


Figure 105. Level 4 IPU Plan - Typical Views Access

SOLAR SHADING AND GLARE MANAGEMENT

The requirement for solar shading within the IPU levels has been reviewed. The varying orientation of patient rooms due to the building form assists to reduce the number of rooms impacted by excessive solar ingress. The extent of solar ingress to IPU rooms is limited, due to the limited glazing to solid wall percentage <25%. Solar gains will be managed with the adoption of high performance DGU's. Glare management will be addressed in part within the performance characteristics of the glazing, complemented by adjustable room blinds, that cater for individual comfort.

The main public north viewing deck at ground level is recessive, set back 35m between the quadrant anchor forms. The setback assists to provide shade at times of the day. Landscaping will assist to provide shade to the seating area on the terrace.

The sun washed terrace is a social gathering place that has sun access all year around. Alternative public outdoor places are provided to the south, east and west of the hospital.

MITIGATION MEASURES AROUND MOSQUITO (INCLUDING MOSQUITO BREEDING) AND BITING INSECTS

Cudgen and Kingscliff are located between the Tweed River and Cudgen Creek. There are many local lakes and tributaries which network in nearby proximity to the development site, giving rise to areas prone to flood inundation during peak rain seasons and flood events. This feature of the region has contributed to its natural beauty, with low-lying, flood prone lands supporting nature and flora reserves remaining undeveloped. Due to the extensive coastal waterways and estuarine wetlands and other factors, mosquito and biting midge nuisance requires consideration as defined in Tweed Shire Council, Planning Control Document A-6, which has been considered during schematic design stage of the landscape and hospital buildings.

Design consideration has been given to minimize the impacts of these species on the users of the hospital, having regard for recommended propagation mitigation guidelines which are relevant to earth works and landscaping affecting ground water drainage, landscape design proposals, the planning and design of usable outdoor space. Due to the general requirement for mechanical ventilation, the provision of openable windows will be highly limited. Where opening windows will occur, integration of a fine meshed fly screen will be provided.

At operational stage the Hospital will need to implement a range of maintenance and control procedures to limit future species propagation opportunity by ensuring appropriate grounds management to safe guard the well being of all its users.

Figure 106. Site Photograph (Bates Smart), Dawn View

5.6 ENVIRONMENTAL AMENITY IMPACTS (IMPACT TO SURROUNDING LAND USES)

VISUAL PRIVACY

The hospital is placed nominally at the centre of the deepest zone of the site. The south site boundary road interface is lined with an existing retained tree line windbreak augmented to the south west corner with a landscaped agricultural buffer zone. The agricultural buffer returns along the west boundary. The windbreak on the southern boundary is however discontinuous across the hospital forecourt interface with Cudgen Road to establish a public realm address on the main street. To the north and partial west boundary of the site are bordered by a forested area. The extensive tree lined site boundary assists to minimize the impacts of overlooking over neighbouring lands from the upper levels of the hospital.

There are minimal residences to the south of the hospital. Two neighbouring residential properties are located immediately adjacent the hospital forecourt. The hospital is however set-back over 80m at this location, and augmented with a treed forecourt zone to the hospital results in minimally privacy impacts to these residences.

The Kingscliff Hill suburban precinct is located to the east of the site beyond Turnock Street. The hospital is setback over 300m from this boundary and therefore there are no visual privacy impacts to this orientation.

To the north the closest residential area is West Kingscliff Precinct, which provides a range of low density, low rise housing types. This Precinct is situated beyond the north environmental area over 600m away from the hospital. There are no visual privacy impacts to this orientation.

To the west, agricultural lands abut the hospital site. The nearest residential settlement is Cudgen Village, located west of Tweed Coast Road over 350m away and therefore these residents are also not impacted upon by overlooking.

VISUAL AMENITY

Visual amenity impact to surrounding neighbouring properties as a result of the hospital development has been addressed in specialist Visual Impact Consultant Report - refer Appendix J.

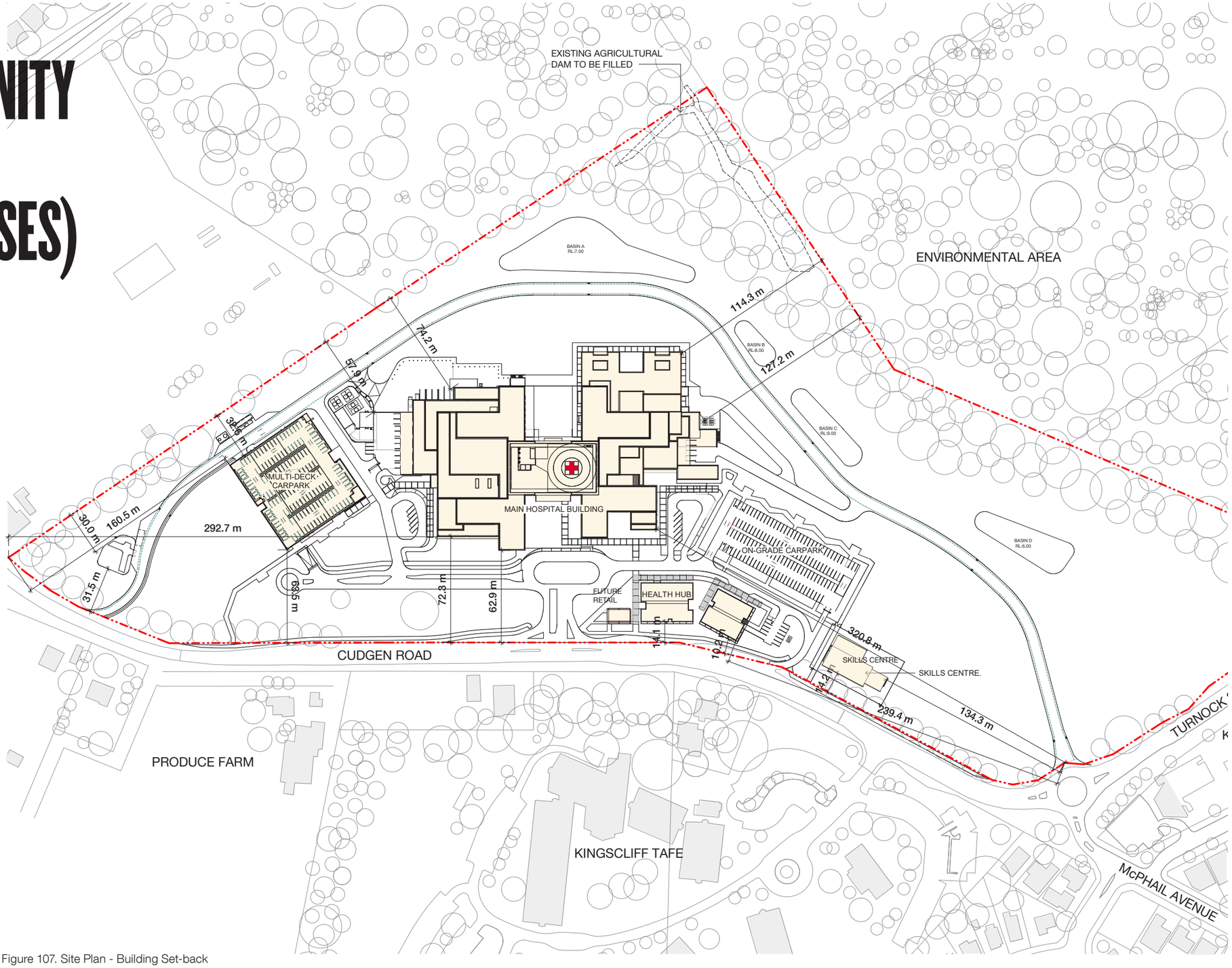


Figure 107. Site Plan - Building Set-back

OVERSHADOWING AND SOLAR ACCESS

The hospital as the tallest building on site, set back from Cudgen Road by 65m is situated on the northern most edge at the deepest developable land zone on site, is placed sensitively having regard for the neighbouring receiving built environment.

Shadow diagrams have been prepared which reflect the overshadowing impact of the Hospital at hourly intervals from 9am to 3pm during the winter solstice (June 22nd). To contrast, shadow diagrams have also been provided for the summer solstice (December 22nd).

The diagrams demonstrate that shadows cast by the hospital building are largely contained within the sites title boundary, with minimal shadow impacts along the southern boundary, fringing the street edge of neighbouring lands to the south in the hours of 2-3pm on the winter solstice.

Courtyards and key public spaces receive a good amount of direct sunlight, achieving more than 2 hours of direct light on its base surface for the majority of the year. The mental health courtyards do not receive direct light on their base surface in winter. There are landscaped public outdoor spaces which receive direct sun access located in close proximity.

The position of the hospital results in no overshadowing of adjacent agricultural lands.

BUILDING FACADE, REFLECTIVITY

Glass or other materials with highly polished or glossy characteristics have potential to reflect sunlight when angled to the suns ray's angle of incidence. Adopting sensible glass quantities and glass reflectivity (VLR, Outside %) levels combined with building geometry and orientation work together to affect reflectivity levels. Substantially glazed and angled (in the vertical plan) façade buildings have greatest negative reflectivity impacts on surrounding receivers.

The material palette for the hospital building varies across its elemental parts. The outer extremities of the hospital comprise a combination of pre-cast concrete and profiled metal sheet finishes incorporating punch-hole windows. The recessive building core as a counter-point is designed to be a window wall system, incorporating solar screening blades. While the specific building glass is yet to be selected, the selection will aim to maintain external reflectivity percentages below 22%. Working collectively with the façade matrix, overall reflectivity percentages will be maintained below 15%.

As a result of the projecting geometries of the extremity forms, the recessive façade element is shaded within the deep spatial recesses from direct solar impact. Furthermore, the extremity forms are clad substantially as solid forms having less than 25% glazing to solid ratio.

Collectively the designed façade composition achieves a low reflective level, ensuring minimal impact to passing motorists or local neighbouring land users and sensitive receivers.

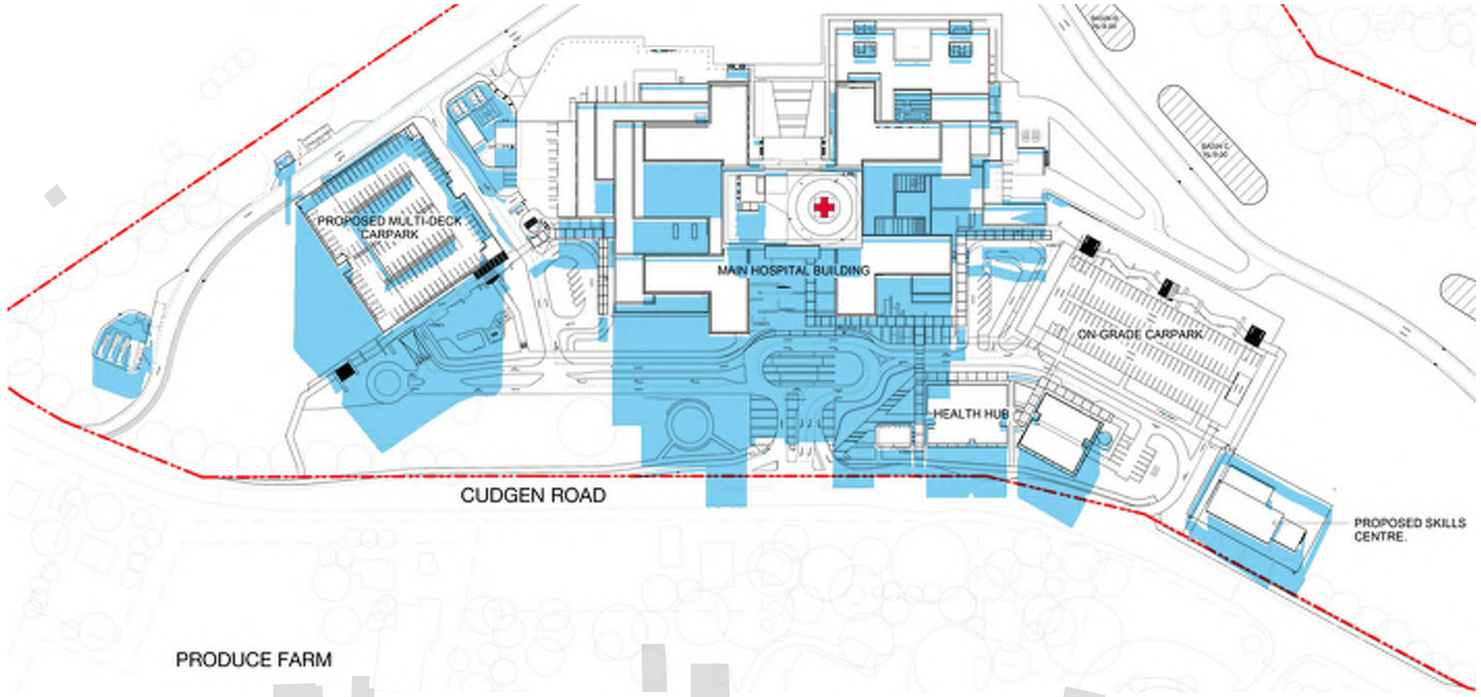


Figure 108. Shadow Diagram - 3pm, 21 June

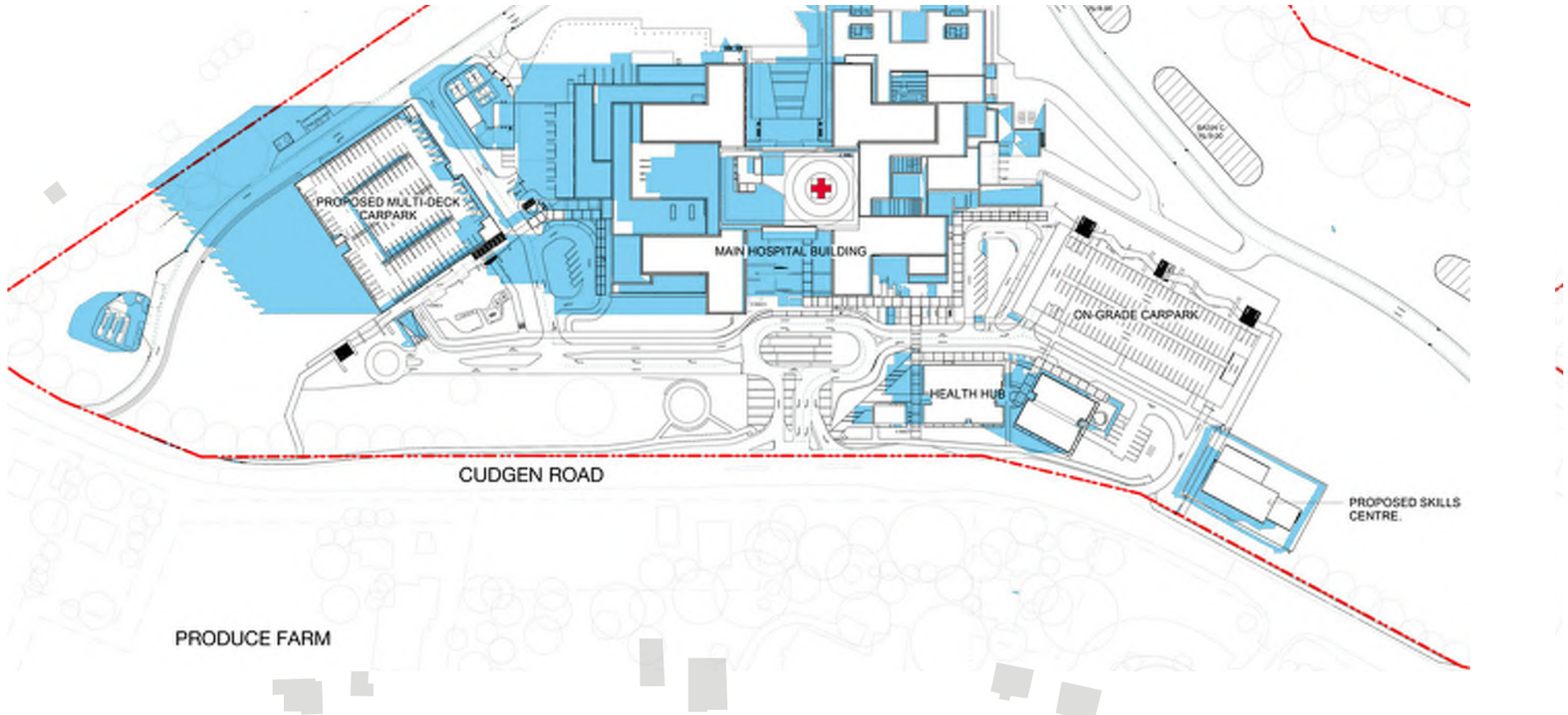


Figure 109. Shadow Diagram - 9am, 21 June

WIND IMPACTS

The site is elevated along Cudgen Road with a maximum RL of approximately +26.3 AHD, with the main hospital ground floor level entrance at +27.75 AHD. The site falls to the north and north west along the ridge line to an RL of approximately +1.0 AHD, a level change of approximately 25m. The established treed environmental area to the lower north of the site includes mature trees ranging from 15-20m in height provide minimal wind screening to the hospital.

The site has an existing established treed wind row along Cudgen Road to the south. The wind row returns partially on the west title boundary, which progressively falls away to the north. The required agricultural buffer requirements for the site will provide further wind screening augmentation to the west and south boundary, helping mitigate the wind impacts to the south west hospital orientation.

The hospital building is positioned with the main entrance orientated approximately south east, with the main ground level north public terrace orientated north west. The main hospital entrance forecourt and north public terrace are recessed within the building form ensemble providing shelter from the main prevailing wind directions.

The lower ground level west emergency department entrance is orientated south west, orientated towards the predominant winter wind direction. The west façade of the hospital will receive wind screening from the Multi-Deck Carpark building assisted by the boundary landscape treatment.

The hospital design provides for entrance airlocks at the main public entrance locations to the south, west, east and to the ground level public terrace to north. The building design incorporates a number of patient balcony spaces at the upper levels of the building. These will be screened with minimum 1.8m tall glazed balustrades. Where functionally permissible, external doors will be designed to be sliding operated.

The hospital design includes a rooftop helipad at level 7. At landing and take-off times the helicopter will produce rotor down-wash. Down-wash will have limited impact on the hospital function as there are no open terraces at the higher levels of the building. Detailed design will have regard for further performance requirements, including acoustic impacts.

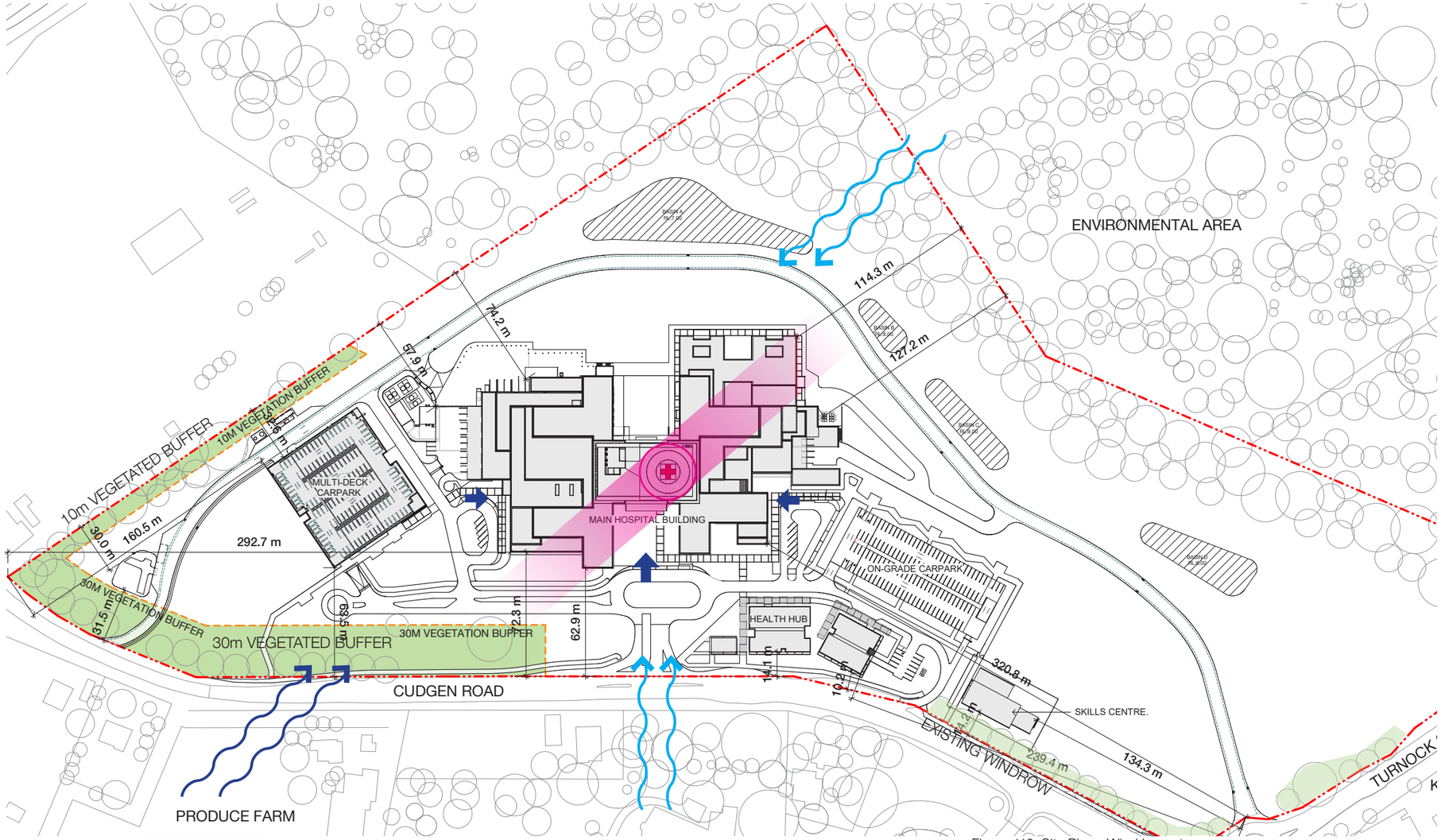


Figure 110. Site Plan - Wind Impacts

BUILDINGS

AFTERNOON WINDS

MORNING WINDS

VEGETATED BUFFER (WIND ROW)

HELICOPTER APPROACH

PUBLIC ENTRANCE

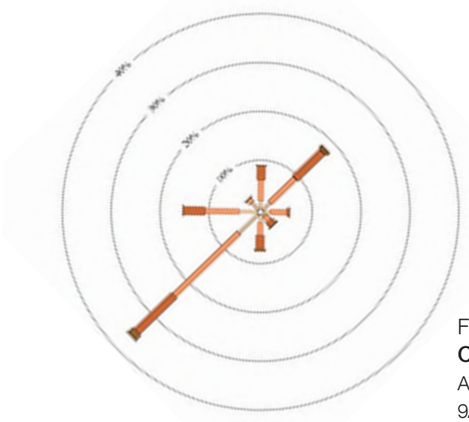


Figure. 62b Wind Rose (BOM)
COOLANGATTA
Annual Average
9AM (Morning winds)

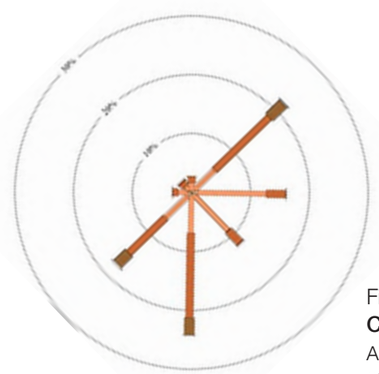


Figure. 62c Wind Rose (BOM)
COOLANGATTA
Annual Average
3PM (Afternoon winds)

0 20 40 60 80m

STH BATESSMART.

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